

American journal of numismatics.

New York : American Numismatic Society, 1989-

<http://hdl.handle.net/2027/inu.30000103034587>

HathiTrust



www.hathitrust.org

Creative Commons Attribution-NonCommercial-ShareAlike

http://www.hathitrust.org/access_use#cc-by-nc-sa-4.0

This work is protected by copyright law (which includes certain exceptions to the rights of the copyright holder that users may make, such as fair use where applicable under U.S. law), but made available under a Creative Commons Attribution-NonCommercial-ShareAlike license. You must attribute this work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). This work may be copied, distributed, displayed, and performed - and derivative works based upon it - but for non-commercial purposes only (if you are unsure where a use is non-commercial, contact the rights holder for clarification). If you alter, transform, or build upon this work, you may distribute the resulting work only under the same or similar license to this one. Please check the terms of the specific Creative Commons license as indicated at the item level. For details, see the full license deed at <http://creativecommons.org/licenses/by-nc-sa/4.0>.

AMERICAN JOURNAL OF NUMISMATICS

16-17



Second Series

THE AMERICAN NUMISMATIC SOCIETY
NEW YORK
2004-05

AMERICAN JOURNAL OF NUMISMATICS

16-17



Second Series, continuing

The American Numismatic Society Museum Notes

THE AMERICAN NUMISMATIC SOCIETY

NEW YORK

2004-05

INDIANA UNIVERSITY
BLOOMINGTON

CJ
1
.A516
no. 16 \ 17
2004
- 2005-

© 2005 The American Numismatic Society

ISSN 1053-8356
ISBN 0-89722-296-2

Printed in China

AAY 8233 B3

5A540

Digitized by Google

Original from
INDIANA UNIVERSITY

CONTENTS

Editorial note	v
WILLIAM S. BUBELIS. An overstruck stater of the Cypriot kingdom of Salamis	1
PETER G. VAN ALFEN. Herodotus' "Aryandic" silver and bullion use in Persian-period Egypt	7
PETER G. VAN ALFEN. A new Athenian "owl" and bullion hoard from the Near East	47
PAOLO VISONÀ. Twenty-two Alexanders in Ann Arbor	63
ELENA STOLYARIK. Silver coinage of the Bosporan King Spartocus: the problem of attribution	75
RICHARD B. WITSCHONKE AND MICHEL AMANDRY. Another Fimbria cistophorus	87
SOPHIA KREMYDI-SICILIANOU. Multiple hoards of the second century AD from the sanctuary of Zeus Olympios at Dion (Macedonia)	93
MICHAEL FEDOROV. New data on monetary circulation in medieval Andükān and Shelji: coins from the Andizhanskoe and Kirovskoe vodokhranilishche	113
ERIC J. HANNE. Death on the Tigris: a numismatic analysis of the decline of the Great Saljuqs	145
DAVID YOON. Counting tokens from the excavations at Psalmodi (Gard, France)	173
OLIVER D. HOOVER. A note on the typology of the St. Patrick coinage in its Restoration context	185
CHRISTOPH ROSENMÜLLER. Silver merchants and assayers' marks: the <i>visita</i> of 1729–1730 and the reform of the Mexican mint	205
SCOTT H. MILLER. The ANS Lincoln Memorial medal: a reexamination	221

- PIERRE ATALLAH, MICHAEL KUNTZ, RENEE KUZAVA, JENNIFER FERGUSON,
VINCENT IDUMA, AND MARK BENVENUTO. Elemental compositions of
some of the Annamese coins of Emperor Thanh Thai via energy-
dispersive x-ray fluorescence 231**
- JULES JANICK AND JUDITH B. SANTINI. Street money: distribution and
analysis 259**
- PETER G. VAN ALFEN, ELENA STOLYARIK, SEBASTIAN HEATH, MICHAEL L. BATES,
AND ROBERT W. HOGE. Acquisitions for 2003 and 2004 in the American
Numismatic Society Collection 269**

Dear Readers,

In 2004 the American Numismatic Society moved from its home at 155th and Broadway in New York City, where the Society had been for nearly a century, to a new location on the corner of William and Fulton Streets in the Financial District of lower Manhattan. In order to mark the occasion, we present this special double issue of the *American Journal of Numismatics*.

This issue also introduces the new *American Journal of Numismatics* editorial committee, the members of which can be found on the following page. The purpose of the committee is to assist the editors in vetting manuscripts for publication through the anonymous peer-review system. Because the *American Journal of Numismatics* covers a vast range of periods and numismatic-related topics, the committee members likewise reflect specialization in various fields and periods, from antiquity to the present day. For information and guidelines on submitting manuscripts to the *American Journal of Numismatics*, please see our website at <http://www.numismatics.org>.

Peter G. van Alfen
Editor

AMERICAN JOURNAL OF NUMISMATICS

Peter G. van Alfen
Editor

David Yoon
Managing Editor

Müşerref Yetim
Assistant Editor

Editorial Committee

John W. Adams
Boston, Massachusetts

John H. Kroll
University of Texas at Austin

William L. Bischoff
New York, New York

John Ma
Oxford University

Jere L. Bacharach
University of Washington

Andrew R. Meadows
British Museum

Kenneth W. Harl
Tulane University

Eric P. Newman
St. Louis, Missouri

Paul T. Keyser
IBM T.J. Watson Research Center

Ira Rezak
Stony Brook, New York

John M. Kleeberg
New York, New York

Stephen K. Scher
New York, New York

Robert Knapp
University of California, Berkeley

Stuart D. Sears
Westport, Massachusetts

An Overstruck Stater of the Cypriot Kingdom of Salamis

PLATE 1

WILLIAM S. BUBELIS*

An overstruck silver stater in the ANS cabinet provides unique testimony for a previously unknown king of Salamis, Cyprus, of the mid-fifth century BC. The distinctive traces of the host coin suggest that it was originally issued by King Euanthes of Salamis earlier in the fifth century, and then restruck with standard Salaminian types by a King Sophysas. Despite the difficulties posed by the syllabic legend, the name Sophysas remains the most plausible interpretation, and would be linguistically and culturally appropriate for a Cypriot ruler of this period.

Although the kings of the Cypriot kingdom of Salamis are better attested than most of their peers on the island, a number of difficulties still pose vexing obstacles to our knowledge of their chronology, identity, and coinage. Kaelyn A. McGregor has recently (1999) made significant progress on the numismatic corpus of Salamis, although some difficulties remain. This note is intended to expand upon her publication of a silver stater of Salamis in the collections of the ANS, which I argue provides unique testimony for an otherwise unattested king of Salamis, reigning perhaps in the mid-fifth century BC.

The stater in question weighs 10.60 grams and is overstruck (Plate 1 no. 1). The reverse die used for the overtype is oriented to 6:00 relative to the obverse. Now at the ANS, the coin came from the personal collection of E. T. Newell and

* Department of Classics, University of Chicago, 1115 East 58th Street, Chicago, IL 60637, USA (wsbubeli@uchicago.edu).

was published by McGregor as her no. 289 under "Uncertain Authority" (1999: xlv, pl. 15); nothing is known of its ultimate provenience.¹ Overstrikes are not uncommon among early Cypriot staters, but identification of the host coin is often difficult or impossible. Because those hosts are often the products of mints whose own chronologies are not yet understood sufficiently, such overstrikes have not always provided much useful chronological information. Although the precise date and historical context of the coin are problematic and beyond the scope of this discussion, without question the coin, as both host and overstrike, belongs firmly to the well-known group of early Salaminian coins that feature a recumbent ram as the obverse type.

The obverse images of both the undertype and oertype are worn and pitted. The entire obverse surface was bent by the act of re-striking, the result of which was a coin with a distinctly convex, scyphate-like profile. In consequence, the reverse was inadvertently protected from otherwise normal wear. The obverse oertype is that of a recumbent ram facing to the left without any syllabic characters (or other symbols), although the degree of wear and pitting is extensive and may obscure some traces. As the obverse die began to fail, several ridges formed in the obverse field, particularly those that seem to emanate in an arc from the ram's hindquarters and closely follow the perimeter of the coin, in addition to one that seems to jut back from the ram's head. In any case, these features cannot be confused with any legend or other signs, and probably have no relation to the undertype as well.

The reverse oertype consists of an incuse square in the corners of which are four syllabic signs around a central device. The sign *pa* is located in the loop of what is conventionally described as an ankh, and typical of early Salaminian coins over a wide range of denominations (Hill 1904: lxxxvi–xcvi, pls. 9–10.10; McGregor 1999: A–J, nos. 1–357, pls. 1–17). The obverse undertype is identical to that of the oertype: a recumbent ram facing to the left, whose head and horn are visible above that of the oertype's ram, as if rotated slightly clockwise, and whose body visibly "cuts" through that of the oertype. On the reverse, the undertype is apparent in the outline of a ram's head facing to the right within an incuse circle (Plate 1 no. 2). These features are remarkably similar to those on the staters of King Euanthes of Salamis (Plate 1 no. 3), and also on a unique stater of King Nikodamos, also of Salamis (McGregor 1999: no. 335 = Leu, May 1974, no. 169), both of whom reigned in the early fifth century. The outer curving profile of the horn is clearly visible, as are the upper and lower outlines of the ram's head. The collar of the ram's head cleanly bisects the base of the ankh. Although the Cypriot corpus is admittedly large and not fully known, no other coins possess these particular

1. Mr. Newell's wife donated the coin (1967.152.548) to the ANS in 1967, in the second and final of two major donations of coins from his collection, following Mr. Newell's much earlier passing. McGregor (1999: xlv) does not read the legend as a king's name, gives only the signs *u* and *sa* in the corners of the reverse, and does not indicate that the coin is overstruck.

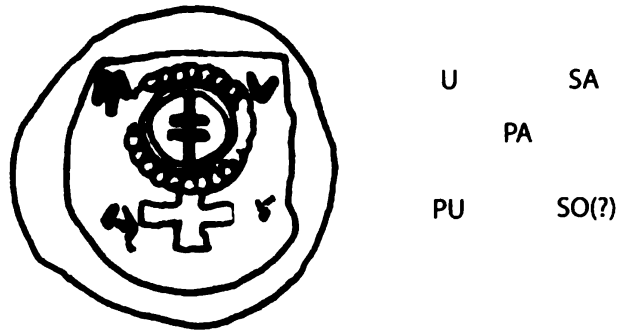


FIGURE 1. Schema of syllables as arranged on reverse.

features, which may be considered as reliably diagnostic. On this coin, there is no trace of the barley grain and floral branch that grace the stater of Nikodamos, which leaves Euanthes as the probable original issuer of the host coin. Relative to the obverse die, the reverse die of this host is oriented to 10:15.

In the corners of the square on the reverse are four signs that represent in the Cypriot syllabary the name of the king who overstruck the host coin (Fig. 1).² In accordance with standard practice, the sign in the center of the ankh is read as *pa*, and is commonly understood as a syllabic abbreviation for the word “king” in the genitive case (i.e., βασιλῆφορ).³ The sign in the upper right is *sa*, while that in the upper left is *u*. In the lower left, the sign is conventionally read as *pu* (and can also stand for the voiced *bu*), but here probably represents the aspirate (*phu*). The sign in the lower right corner is almost entirely obscured by the effects of a chipped (overstriking) die, but is consistent with the sign *so*.⁴ Beginning with the damaged

2. Bazemore (1998) provides the most recent and comprehensive treatment of the Cypriot syllabary, including a catalogue of known inscriptions.

3. The form reproduced here is the expected genitive singular of consonant declension nouns of (Attic) -εύς type in the Cypriot dialect, for which see Masson (1961: 119 and *passim*). The consonant represented here by the *digamma* is indicated fully in the Cypriot syllabary.

4. Two separate bars of the sign in question are visible, of which the uppermost bar appears to be projecting at an angle from the body of the sign, but no further than the lower bar, of which only the shoulder is partially visible. There are a number of signs in the common Cypriot syllabary (i.e., exclusive of the Paphian syllabary), which might possess these particular diagnostics, such as (in the order of the Greek alphabet, including *w* for *digamma*) *wi*, *za*, *ke*, *ku*, *ma*, *mu*, *o*, *ri*, *so*, and *te*. Even if the legend is assumed to begin with the damaged sign and run retrograde, none of these signs complete a recognizable personal name or toponym. According to standard (Leiden) epigraphic convention, the first syllable would therefore be “dotted” if this were in an alphabetic script. However, that convention is not generally followed for the Cypriot syllabary, where the primary text is transliterated before being resolved into an alphabetic form with familiar accents, breathing marks, and punctuation.

sign, the inscription reads retrograde, bottom to top. Transliterated as *So-phu-sa-u*, the legend on this stater appears to record the name of its issuer. The legend resolves as the expected Cypriot genitive for the name of King Sophysas (i.e., nom. Σωφύσας, gen. Σωφύσαι). Although the quantity of the /o/ vowel is indeterminate in the Cypriot syllabary, the name makes good sense as a natural compound of two standard onomastic elements if the initial vowel is treated as long (hence the omega). Similar examples are known (sometimes with the fully expanded form Σωσι-), especially from linguistically West Greek regions, with which Cypriots had fairly frequent contact.⁵ Elite families might find the name Sophysas particularly appropriate, given how it combines the senses of “safety” or “security” with that of “progeny” and “growth”, all of which are commensurate with claims to legitimate succession, if not merely a thanksgiving for a healthy child. Although this name is not otherwise attested on Cyprus or elsewhere within the Greek world, the corpus of Greek personal names exhibits great variety in the different names, often far more unusual than Sophysas, which are formulated from even common stems and elements.

Although the initial syllable is damaged, no other interpretation of the legend seems plausible, and the suggestion offered here is linguistically appropriate for a king of Cypriot Salamis. In lieu of another example of a stater with an unbroken and therefore fully legible reverse die, or an example of another denomination altogether, the ANS stater remains unique but somewhat problematic evidence. Upon the best reading possible, the coin testifies to a previously unrecognized king of mid-fifth-century Salamis, whose name was probably Sophysas, ruling sometime shortly after another king of Salamis, probably Euanthes.

ACKNOWLEDGMENTS

Although this is a short contribution, it has a long history. My family deserves my deep gratitude for boundless encouragement and patience, without which this would not have appeared. Dr. Carmen Arnold-Biucchi also gave critical support at an early juncture, during my initial study of the early Cypriot coinage at the ANS. Dr. Anne Destrooper offered further support at a yet later stage, generously sharing her expertise in Cypriot numismatics. Dr. Aaron Burke provided useful comments on a very early draft. The editor, Mr. David Yoon, and the anonymous peer reviewers also have my thanks for their efforts, which have made this contribution a better one. My work was also leavened by the welcome shown to me by the staff

5. Parallel examples range from such names as Σωσιγένης and Σωγένης to Σώδαμος and Σώφιλος, formed with either the full or hypocoristic forms of the stem Σωσι-, for which see the *Lexicon of Greek Personal Names* and especially vol. III.A. Κριτζάς (1997) surveys the extensive epigraphic material for Cypriots in the Argolid.

of the ANS on my visits over the years. Of course, I alone am responsible for any remaining mistakes of substance or expression.

LIST OF ILLUSTRATIONS

- 1, 2. American Numismatic Society, New York: ANS 1967.152.548.
3. British Museum, London. © Copyright The British Museum.

REFERENCES

- Bazemore, Georgia Bonny. 1998. *The role of script in ancient society: the Cypriote syllabic inscriptions, a study in grammatology*. PhD dissertation, University of Chicago.
- Hill, George Francis. 1904. *Catalogue of the Greek coins of Cyprus*. London: British Museum.
- Κριτζάς, Χαράλαμπος Β. 1997. Επισκόπηση των επιγραφικών μαρτυριών για σχέσεις Κύπρου και Αργολίδος-Επιδaurίας. In: *Proceedings of the International Archaeological Conference: Cyprus and the Aegean in antiquity: from the prehistoric period to the 7th century A.D.*, pp. 313–322. Nicosia: Department of Antiquities, Cyprus.
- McGregor, Kaelyn Ann. 1999. *The coinage of Salamis, Cyprus, from the sixth to the fourth centuries B.C.* PhD dissertation, University College, London.
- Masson, Olivier. 1961. *Les inscriptions chypriote syllabiques: recueil critique et commenté*. Études chypriotes 1. Paris: École française d'Athènes.

Herodotus' "Aryandic" Silver and Bullion Use in Persian-Period Egypt

PLATES 2–5

PETER G. VAN ALFEN*

In light of a new mid-fifth c. BC Egyptian hoard containing three large plano-convex ingots and 19 coins and coin fragments, this article reviews the hoard and textual evidence for bullion use in Persian-period Egypt (c. 525–330 BC), concluding that silver bullion in the form of Hacksilber and ingots was used for a large range of monetary transactions, and that within these transactions the Egyptians recognized at least three grades of silver, the most pure of which was the "Aryandic silver" mentioned by Herodotus (4.166).

In 2004 and 2005, the American Numismatic Society received two important unpublished donations: nineteen Greek coins and coin fragments plus two dumps¹ and three large plano-convex ("cake") ingots. These gifts form the larger portion of a fifth-century BC hoard that was found in Egypt in the early part of the twentieth century; since the 1950s the hoard had resided in a collection in Switzerland that was recently sold. An additional lot of two coin fragments from the hoard remain in a private American collection. Although there is no way to ascertain if all these

* The American Numismatic Society, 96 Fulton St., New York, NY 10038, USA (vanalfen@numismatics.org).

1. I use "dump" to refer to smaller, i.e., 20 g or less, individually formed, unworked pieces of silver. Unlike the plano-convex "cake" ingots, which were likely formed using a crucible or mould (see below), many of the dumps, which are often fairly flat, were formed by pouring molten silver onto a flat surface to cool, or by melting silver in or on an instrument with a mostly flat cross-section.

The following abbreviations are used: *IGCH* = M. Thompson, O. Mørkholm, and C.M.

lots compose the entire hoard, what material we have is nevertheless significant because of the evidence it provides for the monetary use of silver bullion in Egypt during the fifth century BC. The presentation of this new hoard provides an opportunity to review the evidence for bullion use in Persian-period Egypt vis-à-vis coinage, and to address the question of Herodotos' "Aryandic silver" (4.166). Using contemporary hoard material in conjunction with evidence from fifth-century Aramaic texts from Egypt, I argue (contra Tuplin 1989) that Aryandic silver is not coinage but exceptionally pure silver bullion. Furthermore, I argue that silver bullion was commonly used for a considerable range of economic transactions in Persian-period Egypt, probably well into the fourth century BC, but was predicated upon the identification and confirmation of at least three grades of silver. "Aryandic" silver was simply the highest grade of bullion.

INGOT HOARD CATALOGUE

The new hoard contains a total of 19 coins or fragments of coins, four smaller silver dumps and fragments of the larger ingots, and three large cake ingots. More than half of the coins (ten in total) are Athenian tetradrachms, the other nine coins include two fragments of Alexander I octadrachms, and one (perhaps two) Lycian stater(s), a stater from Idalion, and fragments of other coins that might include a stater of the Orescii. The Idalion stater (no. 15) and most of the Athenian tetradrachms remain intact; nearly all the coins, complete or not, bear chisel cuts.

Athens

Obv.: Head of Athena wearing crested Attic helmet ornamented with floral spray and olive leaves to r.

Rev.: Owl standing to r., to r. AΘE; to l. olive sprig and lunar crescent.

(in order of descending weight)

1. ANS 2005.12.5; 17.87 g; 10:00; rev. 1 cut
2. ANS 2006.1.3; 17.41 g; rev. 1 cut
3. ANS 2005.12.2; 17.38 g; 11:00; rev. 1 cut
4. ANS 2005.12.7; 17.30 g; 5:00; rev. 1 cut
5. ANS 2005.12.3; 17.22 g; 3:00; (no marks)
6. ANS 2006.1.4; 16.11 g; partially melted fragment with fragment attached
7. ANS 2005.12.4; 15.06 g; 1:00; (no marks)
8. ANS 2005.12.12; 14.68 g; 11:00; (no marks)

Kraay, *An Inventory of Greek Coins Hoards* (New York: American Numismatic Society, 1973); CH = *Coin Hoards 1976–2002*, vols. I–IX (London: Royal Numismatic Society, 1976–2002); TAD = B. Porten and A. Yardeni, *Textbook of Aramaic Documents from Ancient Egypt*, 4 vols. (Winona Lake: Eisenbrauns, 1986–1999).

9. Private collection; 14.06 g; fragment cut on one side; partially melted. Not illustrated.

10. ANS 2005.12.8; 12.22 g; 5:00; fragment cut on three sides

Insofar as their state of preservation allows observation, all ten of these owls are of the later fifth-century standardized type, which began in the 450s and was minted in vast numbers for a number of decades thereafter (Starr 1970: ch. 4; Kroll 1993, 6); none appear to be imitative. Some hesitation might arise in attributing no. 10 to the standardized group (note the small letters on the reverse), but with so much of the coin cut away, we must rely on other indicators, such as the helmet ornament and hair of the obverse, which appear to be no earlier than Starr's group V. The weights of nos. 1–4 are well above the Athenian tetradrachm standard of c. 17.2 g, but since these coins have not been thoroughly cleaned the remaining encrustation likely accounts for the greater weight. As on other c. 450 BC owls, the die axes in this group are irregular; it was only toward the end of the fifth century and into the fourth that the axis was regularized at 9:00.

Macedonia: Alexander I

Obv.: Horseman, wearing chlamys and petasos, carrying two spears, leading horse r.

Rev.: Quadripartite incuse square

11. AR octadrachm fragment; 11.07 g (private collection). Not illustrated.

12. AR octadrachm fragment; 8.36 g (ANS 2005.12.14)

Enough remains of these coins to make their identification possible but little else can be said about them. Troxell (1994, no. 1; following Raymond 1953, 53–59) suggests a date of c. 492–480/79 BC for this series.

Lycia

13. AR stater fragment; 8.85 g; *obv.*: (obliterated); *rev.*: sphinx seated to l.; *rev.* 1 cut (ANS 2005.12.9)

14. AR stater fragment; 8.52 g; *obv.*: (obliterated); *rev.*: triskeles within square dot border, K (?); *rev.* 1 cut (ANS 2005.12.16)

Although the obverse type is effaced, the Lycian triskeles on the reverse of no. 14 makes the attribution certain. Below one of the legs of the triskeles there is what appears to be a solitary "K" (the encrustation on the coin lends some doubt); if so, parallels for this reverse can be found among the coins of the Lycian dynast Kuprlli, c. 485–440 BC (cf. Mørkholm and Zahle 1972: pl. 2, no. 40).

Much less certain is the attribution of no. 13 to Lycia. As on no. 14 no obverse type remains (a rather frequent occurrence on Lycian coins due in part to the use of extremely worn dies and heavy circulation), while the reverse type appears to be a sphinx seated to l., with only the head, breast, and curved tip of the wing visible.

As a type the sphinx is common enough on the coinages of Teos and Abdera, and on coins of Chios and Idalion (see no. 15), but not as a reverse type as here. The sphinx also appears on a few rarer issues from Lycia, mostly as an obverse type facing l. or r., but also much less commonly on the reverse (as on ANS 1977.158.465, which has a sphinx on both sides of the coin). Thus a Lycian attribution seems highly probable.

Idalion

15. AR stater; 10.47 g; obv. 1 cut (ANS 2005.12.11)

Obv.: Sphinx seated to r., two palmettes, one under belly, the other under raised paw; to r. under chin, two Cypro-syllabic characters (*o*, *ne*?); to l. above rump two Cypro-syllabic characters (*ba*?, *sa*).

Rev.: Irregular incuse square.

This coin belongs to one of the first issues from Idalion.³ Traces of Cypro-syllabic characters can be seen on the obverse of the coin, but because of wear their reading cannot be confirmed; most clearly visible is *sa* directly over the sphinx's rump, and perhaps *o* beneath the chin. This coin is closely related to a group of Idalion staters from the Larnaca hoard (IGCH 1272, c. 480–470 BC), that bear the Cypro-syllabic characters *ba*, *sa*, *o*, *ne* in roughly the same configuration as they seem to appear here (Destrooper-Georgiades 1984: nos. 2–4). The order in which these characters should be read is not certain. Often on Cypriot coins *ba* is an abbreviation for the royal title βα(-σιλέως), which means that the remaining three characters could be construed as a personal name.⁴ The date for this series is c. 490 BC (Destrooper-Georgiades 1984: 143, 158; Price and Waggoner 1975: 106).

Unattributed

16. AR stater fragment; traces of obv./rev. types; 6.83 g (ANS 2005.12.6)

17. AR stater fragment; obv.: traces of figure and striated border; 6.18 g; obv. 2 cuts (ANS 2005.12.10)

18. AR stater fragment; obv.: traces of figures; rev.: quadripartite incuse square; obv. 1 cut (ANS 2005.12.18)

19. AR stater fragment; obv.: traces of figures; 5.36 g (ANS 2005.12.29)

3. For the attribution of these sphinx-bearing coins to Idalion see Sheedy (1999). The first series from this mint (c. 500–490) had no inscription, but shared the same irregular incuse reverse with the second (?) inscribed series; a later third (?) series bore a lotus flower reverse; see *BMC Cyprus*, Idalion, pl. 5.

4. Robinson (1935: 181) suggested Onasagoras, the father of a magistrate at Idalion known from a solitary inscription dated c. 449 BC (*ICS* 217), a suggestion that Destrooper-Georgiades (1984: 142) dismisses for lack of corroborating evidence.

The size, fabric, and quadripartite reverse of no. 18 is similar to the staters dating 510–480 BC attributed to the Orescii, a northern Aegean *ethnos* (Price and Waggoner 1975: nos. 62–93); traces of what seem to be the nymph's head and parts of the centaur can be made out, but this might simply be wishful thinking. Clearly visible on the obverse of no. 17 is an elaborately decorated borderline similar to the truncations often seen on rhyton-like animal heads on Archaic coins (cf. Price and Waggoner 1975: no. 816). Perhaps also visible is the rear portion of an ear or eye near the line, but this is not certain. No attribution can reasonably be suggested for this coin, as is the case for nos. 16 and 19.

Small ingots/dumps

- 20. Complete round AR dump; 24.34 g (ANS 2006.1.5)
- 21. AR edge fragment of large cake ingot; 12.73 g; 13.6 x 31.5 mm (ANS 2005.12.17)
- 22. Complete round AR dump, cut; 9.38 g; c. 19 mm (ANS 2005.12.13)
- 23. Small AR crystallized fragment (of larger ingot?); 1.04 g; 8.6 x 10.2 mm (ANS 2005.12.15)

Nos. 20 and 22 are well-formed round dumps. No. 20 is coin-like in diameter but is on average 7 mm thick with hammered edges. No. 22 also has hammered edges but is half the thickness of no. 20; its size and weight suggest that it may be a partially melted coin. However, the large extrusion on one side of the object makes it certain that the silver was completely molten before cooling; thus any original edge would have disappeared.⁵ The side with the extrusion is flat and smooth; the opposite side is considerably rougher. Thus it would appear that the dump was made in a small crucible or mould. No. 21 seems to be the missing edge-portion of cake ingot no. 25. Both pieces mostly fit together, but because the broken edge area of no. 25 is encrusted (the damage to the ingot obviously took place in antiquity), as is the corresponding area on no. 21, no exact fit is possible. No. 23 likewise may be a portion of the extrusion on no. 24.

Large cake ingots

- 24. Complete cake ingot; 1462.98 g; diameter at widest point: 115 mm; average thickness 24 mm (ANS 2006.1.1)
- 25. Incomplete cake ingot; 480.09 g; diameter at widest point: 88.3 mm; average thickness 15 mm; cut (ANS 2005.12.1)
- 26. Complete cake ingot; diameter at widest point: 79.4 mm; average thickness: 15 mm; 330.95 g; cut (ANS 2006.1.2)

5. Two of the three small Egyptian cake ingots published recently by Kroll (2001: nos. 2–3) have flat edges as well; that on no. 3 seems due to the mould or crucible in which it was cast, while the edge on no. 2 might be hammered.

All three ingots retain a thin (c. 1 mm thick) layer of encrustation over some of their surfaces, which limits the accuracy of the observations and of their weights. While it is clear that all three share a similar plano-convex profile, it remains unclear specifically what type of instrument, e.g., crucible or mould, was used to form them or why this particular shape was favored; their round shape is not particularly conducive to efficient storage, nor are they stackable like rectangular or slab ingots. Throughout the history of metallurgy crucibles with rounded bottoms have been favored because of their ability to heat and pour contents evenly. It could be that a range of different-sized purpose-made crucibles were available (at a potter's? at a gold or silversmith's?) to fit every need.⁶ However, the size and shape of nos. 24–26 also roughly correspond to the bottom of a number of different types of commonly available ceramic vessels, e.g., the ubiquitous Persian-period “mortarium” bowl (e.g., Singer-Avitz 1989: fig. 9.7.1–2). Recycling old bowls and cups as crucibles or moulds would be an efficient means of producing these ingots, especially in a nonofficial context, which as I argue below is the most plausible explanation for the production of these ingots, and so the shape could simply be a byproduct of such an expedient.⁷

Each of the three ingots also has one or more extrusions on their flat sides. Those on nos. 24–25 are comparatively large and angular, almost knob-like, while those on no. 26 are like solidified bubbles.⁸ In places on no. 25 where the encrustation has been chipped away, both the convex and flat sides of the ingot are quite smooth and free of small bumps or other irregularities, the large extrusion excepted. A deep cut runs down the center of the flat side of both nos. 25–26. In both cases a chisel smaller than the width of the ingot was used since the edges of the cut are not uniform. The violence of the cutting might also have bent or twisted no. 25, and perhaps contributed to the fragmentation of its edge (see no. 21 above). There are no such cuts or marks on no. 24.

6. Ingots nos. 25–26 could have been cast in the same crucible or mould, but that used for no. 24 was larger. Separate crucibles or moulds were also used to produce the much smaller cake ingots published by Kroll (2001: nos. 1–3). Bivar (1971: 98), citing Herodotus 3.96, which describes the Persian King (i.e., treasury workers) pouring molten silver into *πίθους κεραμίδους* (some type of larger ceramic vessel), assumed that cake ingots were “formed by metal solidifying on the bottom of a jar.” For a fuller discussion of Herodotus 3.96 see Zournatzi (2000).

7. Bivar (1971: 100), commenting on the non-standard size and weight of the seventh-century BC Nûsh-i Jân hoard bar ingots, notes: “Evidently such ingots were not cast by repeated use of a single mould, but at this stage each was made from an individual mould, presumably of clay, which was broken or abandoned after the casting of each single bar.” The same might have been the case for the cake ingots.

8. Conophagos (1980: 329–30) indicates that extrusions of these sorts only form on silver with a purity of 98.5% or greater. See also Conophaogs et al. (1976: 10–11) and Kroll (2003: 8).

Date

The ten Athenian coins necessitate a *terminus post quem* date for the hoard of c. 460 BC, although likely not much more than a decade beyond it. The Athenian coins generally show little sign of wear, unlike the rest of the issues in the hoard, most of which were in circulation for many years. Also, evidence from other hoards indicates that coins from the Northern Aegean, Lycia, and Cyprus do not appear simultaneously in Near Eastern hoards much after c. 440, and, as a group, are mostly confined to hoards dating to around the second quarter to mid-fifth century.⁹ A suggested date for the hoard is therefore c. 450 BC.

Composition

The (apparent) preponderance of Athenian issues in the hoard is a harbinger of the “virtual monopoly” (IGCH p. 225) that Athenian and Athenian-type coins came to have in Egypt. Egyptian hoards dated to the early fifth century display a healthy mix of other Aegean and Levantine issues (cf. IGCH 1644–1647), but toward the end of the fifth century and into the fourth Athenian tetradrachms, both authentic issues and their imitations, become preponderant. Precisely how and why this transformation took place is not known, save that the Athenians appear to have considerably stepped up the production and export of their large-denomination coinage soon after they removed the Delian treasury to Athens in 454; the millions of coins emanating from Athens in the context of trade and military operations may have simply overwhelmed all other coinages circulating in the Near East.¹⁰ Unfortunately, there are no other well-recorded mid-fifth-century hoards from Egypt to provide comparanda, nor has the post-450 BC coinage of Athens been well studied, so little else can be said about these matters here.

The appearance of the Northern Aegean, Lycian, and Cypriot issues in the hoard is comparable to their appearance in two Egyptian hoards that date about 20 years earlier (IGCH 1644, ‘Asyut,’ and 1645, ‘Zagazig’), and to a contemporaneous hoard from the Levant (IGCH 1482, ‘Jordan,’ c. 445 BC). Again, their generally worn, cut, and fragmentary state indicates that these coins had been in the general pool of coins circulating in Egypt and elsewhere for some time.

9. See “composition” below. Also note that in their study of hoards containing Lycian, Cypriot, and Phoenician coinage, Vismara and Martini (2000) indicate that hoards containing coins from these three regions simultaneously date primarily to the second quarter of the fifth century. While this hoard does not appear to contain any Phoenician issues, there are Lycian and Cypriote issues present.

10. For the increased output and circulation of Athenian coinage after c. 450 see Starr (1970: ch. 4); Kroll (1993: 6–7); and Nicolet-Pierre (1998).

OVERVIEW OF HOARD EVIDENCE

Although it is often noted that Near Eastern hoards of the Persian period (roughly the sixth through fourth centuries BC) contain cut coins, coin fragments, and unmarked bullion of various shapes and sizes, no overview of such hoards has yet been compiled. In an attempt to remedy the situation partially, I provide a summary of hoard compositions in Tables 1–5. Since my interest is primarily identifying behavioral patterns in the use of coinage and bullion in the Levant and Egypt, I do not provide a full catalogue of the relevant hoards, but focus on the appearance of cuts and countermarks on the coins, and the presence of ingots, dumps, coin fragments, and other types of bullion. While I realize that the results of any such summary are seriously flawed, due to the imprecise nature of hoard finds and their recording and (ongoing) publication, any overview of the available evidence, no matter how intrinsically compromised, is able to provide at the very least an impression of the monetary situation in Egypt and the Levant during the period in question. I cannot pretend that this overview is exhaustive or conclusive, in part because I have primarily limited myself to hoards that have been published in some easily accessible fashion (e.g., *IGCH* or *CH*), and so can be verified by scholars with access to basic numismatic references. Many relevant hoards, of course, still remain unpublished in numerous vaults, displays, and private collections. And there is also the possibility that many hoards, especially those containing solely unmarked Hacksilber and ingots, were melted down by those who found them prior to being recorded.

Geographically this overview includes hoards from Egypt and the regions along the Levantine coast from Cilicia to Gaza; I shall use “the Levant” as a convenient shorthand for this region. Offshore I have also included Cyprus, which is here treated separately since, at least from a numismatic and monetary perspective, Cyprus was quite distinct from the rest of the region. The minting of coins on Cyprus began decades earlier than it did elsewhere in the Levant, starting in the late sixth century, for example. To the west and north I have included Cilicia because the economic, cultural, and political ties between this region and Egypt, the Levant, and Cyprus had long been quite close; monetary behavior in Cilicia also provides good comparanda for the situation in Egypt. Since coins began to trickle into Egypt and the Levant at about the same time that Persian hegemony in both areas was secured, the *terminus post quem* date for this overview, c. 525, is easily set; less easily determined is the *terminus ante quem* date. Certainly in many locales the monetary habits developed over the previous centuries must have continued in some fashion for a number of years after Alexander the Great’s campaigns in the region in the 330s, despite the ongoing and rapid Hellenization of eastern monetary customs that followed in his wake. Because my interest is in identifying

these habits as they existed before Alexander's forays made a deep cultural impact, I have set c. 330 as the *terminus ante quem* date. I have also included any hoards listed as “late fourth century” so long as they do not include Alexander types or other post-330 issues. Finally, under the Levant rubric I have included two large and important ingot/Hacksilber hoards—CH 1.15 and Pfisterer (2000)—both of which were assigned Black Sea provenances for reasons that have proven to be unfounded; de Callataÿ (2003) has rightly argued that these two hoards came not from the Black Sea region, but from the Levant.

Tables 1–5 provide comparative information on coins in hoards that were validated with cuts and/or countermarks from post-480 BC Cilicia (“C,” Table 1), the Archaic-period Levant (“AL,” Table 2), the Classical-period Levant (“CL,” Table 3), Archaic Egypt (“AE,” Table 4), and Classical-period Egypt (“CE,” Table 5).¹¹ In general, nearly half of all hoards from Egypt contain validated coins (AE 46%; CE 54%), while only a third or so of hoards from Cilicia and the Levant do (C 29%; CL 34%). Significantly, hoards found on Cyprus contained no validated coins. Cutting coins with a knife or chisel at least once was by far the most frequent means of validating coins in all periods (C 12%; CL 28%; AE 38%; CE 43%). As for the total number of cut coins within these hoards, no certain patterns emerge. What can be noted, however, is that rarely does the proportion of cut coins in a hoard surpass 50% of the total number of coins in the hoard; only in two cases does the proportion surpass 70% (IGCH 1259, 72%; CH 9.456, 78%). There are fewer hoards containing coins cut more than once (C 9%; CL 10%; AE 15%; CE 18%), and the proportion of these coins within the hoards tends to be rather small, generally single digits, and rarely more than 20%.

Countermarking is a behavior seemingly confined to the fourth century in all regions (again countermarking is not seen in Cypriot hoards), wherein the proportion of hoards containing countermarked coins hovers around 15% (C 12%; CL 16%; CE 18%). As with cut coins, no obvious patterns emerge in terms of the proportions of countermarked coins within the hoards, although in a few cases

11. The term “validated” recalls the Greek verb δοκιμάζω (‘to test, validate’) from the Athenian coinage law of 375 BC (SEG 26.72; Stroud 1974), in which the δοκιμαστής (‘public Validator’) is instructed to test coins for counterfeits and imitations. It should be noted, however, that in Athens at least the Validator only cut coins when they were determined to be counterfeits and were removed from circulation (ln. 11); in Egypt and the Levant cutting does not appear to have demonetized the coins. For the sake of brevity, I have adopted “Archaic” to denote the period from c. 525–480 BC, and “Classical” for the period 480–330 BC. Neither the terms nor the chronological divisions are ideal, particularly when dealing with Near Eastern as opposed to Aegean subjects. Note that there are no Archaic hoards from Cilicia. Also, the total number of Archaic hoards from the Levant is four, thus the usefulness of any statistics to be derived from this group is questionable; for further information see the Appendices.

the proportion appears to be around 100% of the total number of coins within a particular hoard (e.g., *CH* 6.11, 100%; van Alfen 2002b "Endicott's," 100%; *IGCH* 1663, 80%). Finally, hoards containing individual coins that are both cut and countermarked are few in number (C 3%; CL 9%; CE 4%).

Tables 1–5 also provide comparative information on the total number of hoards containing fragmented coins (functionally no different than Hacksilber), ingots, dumps, and Hacksilber. Unmarked silver appears to be wholly absent from Cilician and Cypriot hoards, a significant observation if true since it restricts the monetary use of silver bullion during the Persian period to the Levant and Egypt (at least in terms of the areas under consideration here). Some 16% of CL hoards contained unmarked silver, but here it should be noted that most of the unmarked silver was jewelry, either whole or fragmented, a type of unmarked silver that is mostly absent from Egyptian hoards.¹² It is in Egyptian hoards, especially Archaic hoards, where an abundance of unmarked silver is found (AE 46%; CE 29%), often in the form of complete ingots (AE 23%; CE 14%; compare this to CL 4%). A larger proportion of Egyptian hoards contains fragmented coins compared to those found in other regions (C 3%; CL 13%; AE 38%; CE 29%). Also frequently found in CE hoards are silver dumps (14%, but 0% for AE; compare 6% for CL).

BULLION USE IN EGYPT

The hoard evidence, such as it is, strongly suggests that validated coins and unmarked silver played a comparatively greater role and for a longer duration in the economies of Egypt than they did in the Levant, Cyprus, or Cilicia. The elevated presence of bullion in Egypt would seem to correspond to the comparative lateness of Egyptian minting; no Persian-period hoards with bullion are as yet known from Cyprus, for example, where some communities were minting as early as the late sixth century (e.g., Salamis, "Paphos"). The Phoenician cities of Byblos, Tyre, and Sidon soon followed with indigenous issues c. 450 BC; satrapal issues in Cilicia followed a generation or two later. At some point in the fourth century, early or late we do not know, communities in Samaria, Judea, and Philistia were also producing coins. There are, of course, hoards with bullion found in or close by these areas, but in quantities not at all comparable to the overall proportion of those found in contemporary Egypt. The earliest securely dated coin produced by a recognized authority in Egypt dates to c. 361 BC (a single gold Athenian imitation signed by the ruler Tachos); there may be evidence for unofficial (?) production of imitations

12. To date only one roughly Persian-period Egyptian hoard has been noted as containing any jewelry, whole or fragmented, that found at Samanoud in the 1890s, which contained 470 pieces of Hacksilber, but no coins. The original commentator felt the hoard dated to the early Ptolemaic period, but as the hoard was never properly published, this cannot be verified; see Dressel and Regling (1927: 6 no. 1) and Kroll (2001: 4, "a").

of Athenian coins as early as the 390s, but it was not until after the reconquest of Egypt by the Persians in 343 that large-scale official coining in Egypt truly began.¹³ Again I need to stress the tentativeness of these hoard-based observations, but the delay in indigenous Egyptian coin production (when compared to the northern Levant and the Greek world) would likely account for the greater proportion of bullion hoards from Egypt than elsewhere, and for widespread use of bullion in transactions (Kroll 2001, 11–13). Although certain sectors of the Egyptian economy were highly monetized (as will be seen below), there was, apparently, no need for an official indigenous coinage in Egypt until the later fourth century, again suggesting that other monetary instruments, like bullion, were in use. Why this was so is a complex question and one beyond the scope of this paper. What concerns us here are particular aspects of the way in which bullion and foreign coins in Egypt functioned and were handled, which may ultimately help to shed light on larger social and economic complexities, and more specifically may help to contextualize the new hoard under discussion. We begin with cutting as a method of control.

Although it is not immediately obvious, the presence of the cuts on coins in Egyptian and Levantine hoards can be related to the monetary use of bullion. Cutting coins with a knife or chisel was a practice rarely seen outside of the far eastern reaches of the Mediterranean and it has long been assumed that this practice was meant to test for silver-plated coins with bronze cores, either by private individuals or authorities.¹⁴ Plated coins were circulating in the Near East, especially during the Classical period: 4% of CL hoards and 18% of CE hoards contain silver-plated coins with bronze cores, some of which are even cut.¹⁵ While it is safe to assume that most cuts served to check for plated coins, on occasion cutting a coin might

13. For the early Cypriot issues see conveniently Price and Waggoner (1975: 104–109) and Kagan (1999); for the Phoenician issues Elayi and Elayi (1993); for the coinage of Samaria, Judea, and Philistia Hendin (2001: 82–100) remains the most succinct treatment. For pre-Macedonian minting in Egypt see van Alfen (2002a). The imitation of Athenian coins in the first quarter of the fourth century may have been minted specifically to pay foreign mercenaries (cf. Kroll 2001: 10 and Diodorus 15.29), but this is a hypothesis that stands in need of further investigation.

14. Babelon (1901: 644–645) discusses a number of interpretations of the cuts, including the suggestion that they were meant to demonetize the coins (which, indeed, is what cutting a coin in Athens signaled: SEG 26.72 = Stroud 1974, lns. 11–12), and posits that they served the opposite function in Persian-held lands: they were marks placed on the coins by authorities monetizing coins for circulation. Babelon's suggestion was not followed by Newell (1914: 28) or Dressel and Regling (1927: 13–14), for example, who retained the official context but changed the purpose: a test for bronze cores. Today, the assumption remains that these cuts were meant as tests, but perhaps more in a private than official context; see Elayi and Elayi (1993: 315), for example.

15. See also Elayi and Elayi (1993: 315) for the relatively few plated coins noted in their

also have served the secondary function of marking the coin for other validating or accounting purposes; in some cases there are multiple cuts that exhibit clear patterning in terms of where they appear on the coins (van Alfen 2002a: 6–7). Also, would more than one cut be necessary to test the coin?

What these cuts demonstrate, however, is that a substantial proportion of the coins circulating in Egypt (and the Levant) were subjected to a serious form of control that must have in some cases affected their acceptability. Because there are no overarching patterns that emerge vis-à-vis the cut coins within each time period or region, and because the tools required were not specialized, it is likely that this form of control was ad hoc and personal, performed more often by private individuals than by state officials. If so, we may ask whether cutting was a habit that developed in reaction to coinage, or a form of control that existed before the first coins appeared in the Near East.

Hoard evidence from Tel Miqne-Ekron (35 km southwest of Jerusalem) and Nûsh-i Jân (10 km northwest of Malayir in Iran), for example, shows that the practice predated the arrival of coinage in the Near East by nearly a century, if not more. Of the six Hacksilber hoards found in excavations at Tel Miqne-Ekron, all of which predate the destruction of the city in 604 BC, two of the hoards contain numerous pieces of Hacksilber, approximately stater-sized, bearing chisel cuts similar to those found on later coins (Gitin and Golani 2001: pls. 2.3, 2.4, and 2.6). Likewise, the late seventh-century Hacksilber hoard from Nûsh-i Jân also contains cut pieces (Bivar 1971: pl. II, nos. B9, B13, B16, B19, B20; pl IIIa, no. B48). As on the coins, the cuts vary in depth and multiple cuts are found on an occasional piece. It may have been that some of these deeper cuts served as score lines on a complete ingot to indicate where one could readily make equal divisions (cf. Zournatzi 2000: 247 n. 23). But it is clear that not all the cuts could have served this purpose, especially those multiple cuts forming acute angles, and so we can assume that these cuts served some type of control purpose. Whatever the specific purpose of these cuts (tests for plated Hacksilber or ingots?),¹⁶ they show that personal habits of close control and scrutiny over the supply of silver in circulation

extensive study of Near Eastern hoards. The question of whether or not these plated coins were always counterfeits is complicated by what seem to be officially produced plated coins that appeared from time to time, usually when a recognized coin producer was under duress, as the Athenians were in 405/4 BC, when they produced a series of plated tetradrachms and drachms. For more on these coins and the problems of plated coins in general see van Alfen (2005a).

16. Note also the cuts on ingots nos. 25–26 here. The following Persian-period Levantine and Egyptian hoards also contain ingots or Hacksilber with cuts: *IGCH* 1478, 1483, 1636, 1640, 1644, 1645, 1650, 1651; *CH* 1.15; Pfisterer (2000); Kroll (2001). From a Hacksilber and coin hoard found in Achaemenid Babylonia comes a portion of a bar ingot with cuts

were already firmly in place long before the first coin arrived in the Near East. Under the mechanisms of this tradition of control, coins were treated no differently than other pieces of silver in circulation.

Elements of this tradition of control were carried over to a new form of marking coins in the fourth century: countermarking.¹⁷ As with the cuts, it is agreed that the countermarks served as a form of control, but just what the nature of that control was, and who was responsible for it, are matters that are far from settled.¹⁸ One of two theories are generally provided to explain these often elaborate marks: 1) private bankers, merchants, or other concerned individuals stamped the coins in order to mark them as having good weight and metal and thus as acceptable to themselves and those with whom they conducted business; 2) states or other authorities marked coins in order to indicate their currency within recognized physical boundaries, such as a market, festival, or polis at large. States might also have marked coins to indicate their quality.¹⁹ For most countermarks there is little hope of delineating official versus private use, or for disentangling the actualities of their use. Why this particular form of control was comparatively slow to develop in the Near East, particularly in Egypt, is likely to be explained by the comparatively slow acceptance of coins as coins (see below). Unlike simple cuts, countermarks share a conceptual link with the types (or designs) that appear on coins; both incorporate specific designs that communicate notions of authenticity or authority.²⁰ Thus countermarks would likely only function as intended in an environment where coins were recognized and used as coins, rather than simply as bullion. But, again, what should be noted here is the public and, more importantly, private intent to control and mark the money supply, and the continuation of this practice in various guises in the Near East from at least the seventh century BC onward.

Still more difficult to explain, however, is the function of the ingots; the issues at stake are more complex than might seem at first. Their size, weight, and monetary value immediately suggest that the ingots were intended primarily for storing large amounts of silver in a convenient form, which could at some moment of need

on one face that form an elaborate design (Reade 1986, no. 35). Also contemporary are an Archaic hoard from Asia Minor with cut pieces (Kim 2001), and two Archaic hoards from the West Greek world, the Silenus hoard (Arnold-Biucchi et al. 1988) and the Taranto hoard (IGCH 1874).

17. As noted above countermarking coins in the Near East seems to have begun in the fourth century, an observation also noted by Elayi and Elayi (1993: 315) in their study of Near Eastern hoards.

18. See Le Rider (1975) and Elayi and Elayi (1993: chp. VII).

19. De Callatay (2000: 119–120) argues for the use of countermarks to denote metal quality by the satrapal authority in late fourth-century Cilicia.

20. On the semiotics and functions of coin types, and by extension countermarks, see Seaford (2004: 115–124).

be cut into smaller pieces for transactions (cf. Herodotus 3.96.2). Even so, their appearance in currency (rather than “silversmith’s”)²¹ hoards also suggests that the ingots themselves, as well as their fragments, were used in transactions (Bivar 1971, 1982; Le Rider 2001: 5–8). These two functions, transactional and storage, are not mutually exclusive, since, on a much smaller scale, that is exactly how coins operate. The interpretive problem with most ingots in Near Eastern hoards is what their apparent lack of standardization implies about their function.

In general, we would expect those who produced silver, e.g., the leaseholders at the Laurion mines in Attica, to ship their final product in bulk in ingot form. As with most other commodities, we would expect some fairly exacting standardization of the bulk measure, as, for example, was the case with amphorae of wine or oil (Figueira 1998: ch. 11). We might also expect those who received massive amounts of silver in coins—a state receiving taxes for example—to melt and reshape some of this bulk metal into a form, like large ingots, more easily managed from a physical as well as an accounting standpoint. Again, for the sake of convenience and management, we would expect a high degree of standardization. Whatever the source of the metal might have been (mines, taxes, or booty), this is precisely what we find in the case of the 140-plus silver ingots (*phthoides*) stored in the Parthenon on the Athenian acropolis in 344/43 BC.²² The ideal mark for all 140-plus ingots was 1200 drachmas (5196 g), and within this lot the greatest discrepancy from this mark was less than 2%, demonstrating not just how much care there was in adhering to the ideal, but also that such exactitude was possible with bulk silver.²³ Note too that the figure chosen as the mark (1200 drachmas) has a certain logic: 1200 drachms, or 12 minas, is one-fifth a talent, and as such would be much easier to physically move about than an ingot weighing a full talent (c. 26 kg); 1200 drachmas is also a figure that is easily divisible by 4, 6, and 100, and thus simple to work within the Athenian denominational system.

Rather surprisingly and significantly, the same precision in marks or logic is rarely seen with complete ingots (or even dumps) found in Levantine or Egyptian hoards, as one can see in Figures 1–4.²⁴ Inexactitude and randomness seem to prevail not only in the weights of fragmentary Hacksilber, where it would be expected,

21. Earlier interpretation of bullion hoards tended to label them as “silversmith’s” hoards, thus negating any immediate monetary function for the contents; see Reade (1986), Kroll (2001: 11–12), and Le Rider and Verdan (2002).

22. See *IG II²* 1443, lns. 12–88. Harris (1995: 123–127) provides the Greek text and an English translation; see also the important comments by Kroll (2001: 9–10).

23. The lightest recorded ingot weighed 1184 drachmas (5091 g); the heaviest 1208 drachmas (5230 g).

24. There are similar problems with the one complete cake ingot from the Selinus hoard, which at 420.77 g is close to any expected mark, e.g., one mina; see Arnold-Biucchi et al. (1988: 26, “E”).

but even in the weights of complete ingots and dumps. In a number of cases the weight of an ingot seems to be "within range" of a particular mark, but this is a far cry from the <2% level of precision we noted earlier.²⁵ Among the complete Levantine and Egyptian ingots, the greatest precision in adherence to a mark might, in fact, be found in the new ANS ingot hoard. The largest ingot (no. 24) with a weight of 1462.98 g is within 2% of the weight of three minas, if the standard used was the Babylonian mina of 497.38 g.²⁶ Ingot no. 25 (480.09 g), when complete, might have weighed one Babylonian mina, while no. 26 (330.95 g) is within 1% of 40 shekels, or two-thirds a Babylonian mina. While the numbers are encouraging, these three ingots are not standardized in the strictest sense. The three different weights, which are not easily intermeshed,²⁷ suggest that the ingots in this hoard exhibit the same randomness seen in the weights of the other Levantine and Egyptian ingots and not the complete standardization of the Parthenon ingots. The contrast is indicative of differences in context, process, and function of these two sets of ingots from Athens and somewhere in Egypt.

Good weight, of course, is only one concern when using precious metals in transactions; another important concern is metal quality. This was true even in the case of economies using bullion; the determination of metal quality, for example, was of prime importance in (Neo-)Mesopotamian monetary transactions. Different grades of silver were recognized: silver above 90% purity was to be used in silverwork; 80–90% purity was for monetary transactions, and that below 80% was unfit for either (Reade 1986: 85; Joannes 1994; Powell 1996; Le Rider 2001: 30–31). Among the Persian king Darius' (522–486 BC) reforms (see Bivar 1985)

25. For further comments on the inexactitude of ingot weights see Kraay and Moorey (1981: 10–11) and Bivar (1971: 104–106). Also see Le Rider (2001: 9–11) for more general comments on ingot weights. One possible explanation for such inexactitude is that we are expecting the ingots to weigh sensible fractions or multiples of certain weights, like a mina, and our expectations are misleading us. As discussed below, each ingot might have been purpose made for a specific transaction and so its weight reflects, with reasonable precision, some unexpected figure, e.g., 163 drachmas.

26. We are not entirely certain what standards were used in what parts of the Persian Empire, and whether these standards underwent changes from time to time. One of the most common Near Eastern standards was the Babylonian, which used a mina of c. 497 g (or 504 g) divided into 60 shekels of c. 8.3 g (or 8.4 g). There is some question as to whether this standard was used in Egypt, and whether it underwent modification at some point (Bivar 1985: 621–625).

27. No. 26 is two-thirds the ideal weight of no. 25, which is one-third the weight of no. 24. While division by thirds is possible throughout, the relationship between no. 26 and no. 24 cannot be reconciled in a neat fashion, especially when the weights of the ingots are rendered in shekels: no. 24 = 180 shekels; no. 25 (presumably when complete) = 60 shekels; no. 26 = 40 shekels.

were the use of exceptionally pure precious metals—close to 100%—for monetary and other functions; the reasons for this “fineness phenomenon” (Powell 1996: 234) are not clear, although one possibility, as suggested by Antigoni Zournatzi (2000) was simply control.

Using as a starting point Herodotus 3.96.2, a passage that describes the Persians creating ingots using silver income from tribute,²⁸ Zournatzi argues that the intent of melting and reforming the silver was not necessarily to create standardized ingots for the sake of storage, but to ensure that all the metal stored in the treasury would be of the same high quality. The only way that the treasury could be assured of consistency in the quality of the vast quantities of silver derived from so many sources was to assay and refine the metal systematically, processes that required the silver to be melted first. At the state level standardizing both the alloy and form of the metal makes good sense for the sake of ease in handling and accounting, as suggested already in the case of the Parthenon ingots. But once the silver trickled down through various transactions to come into the hands of the wider public as pieces cut off of these larger ingots (cf. Herodotus 3.96.2), standardized form would likely not continue to be as great a concern as the alloy. In fact, within the Egyptian context, we have already seen one possible manifestation of this concern at the personal level: the cuts on the Hacksilber, ingots, and coins. Further evidence for the control over alloy quality in transactions between individuals can be found in the Aramaic papyri from the fifth-century BC Elephantine military colony in upper Egypt.²⁹

Of the numerous contracts that exist, contracts drawn up by members of the community for a variety of purposes, many contain a formula that specifies the terms of the monetary penalty should the contract be breached. For example, from 12 September 471 BC we have an agreement that deals with the building of a wall; the penalty clause reads (*TAD* B2.1.7): “If I restrain you, I shall give you silver, 5 karsh by the stone weights of the king, pure silver...” (trans. Porten).³⁰ The formula denotes first the type of metal, secondly its weight, and thirdly the quality of the

28. Τοῦτον τὸν φόρον θησαυρίζει βασιλεὺς τρόπῳ τοιῷδε· ἐς πίθους κεραμίνους τήξας καταχέει. πλήσας δὲ τὸ ἄγγος περιαιρέει τὸν κέραμον. ἐπεὰν δὲ δεηθῇ χρημάτων κατακόπτει τοσοῦτο ὅσου ἂν ἐκάστοτε δέηται. (“The Persian King stores the tribute in this manner: melting it down he pours it into ceramic vessels, and once the vessels are full he breaks away the surrounding earthenware; whenever he needs money, he coins (from these ingots) however much is necessary.”)

29. Around 500 BC Jewish mercenaries employed by Darius settled at Elephantine, near Aswan in upper Egypt. Many records of the colony remain in the form of contracts, letters, and lists, written in Aramaic c. 500–400 BC; the corpus has been published in the *TAD* series, while commentary for many of the documents can be found in Porten (1968 and 1986). Less fully studied are papyri of roughly the same date written in demotic.

30. הן כליתך אנתך לך כסף כרשן \\\ מלכא כסף צריך

alloy. Elsewhere, we find as the third element (which is here כסף צריר, “pure silver”) variations of the phrase $\text{לְשֵׁרֶתָא} // \text{ר} (2 \text{ q(arters) to (the) } 10)$.³¹ Bezalel Porten, the major recent commentator on these documents, reads this phrase and its variations as an attempt to bring the weight of the Persian karsh in line with the weight of ten Egyptian shekels.³² There are problems with this interpretation, however. First there is little reason to believe in the existence of this “Egyptian” shekel of c. 8.7 g.³³ Second, if this Egyptian shekel were the intended unit of account in these contracts, there would be no reason to state the penalty in Persian terms and then provide an awkward method of conversion into the Egyptian unit. The nature of contracts is to clarify, not obfuscate. It would make much better sense to interpret “2 q(arters) to (the) 10” as a statement of alloy quality, which, in fact, is how other commentators saw it (Cowley 1923: xxx; Kraeling 1953: 39–40; Naster 1970). Two-quarters of a shekel then indicates the maximum allowable amount of impurities in a mass of silver weighing 10 shekels, or one karsh; thus the phrase denotes silver 95% pure. If this interpretation is correct, it provides further evidence that those using silver in fifth-century Egypt were highly concerned about silver quality. Moreover, it agrees well with the contractual formula noted above, and it also allows us to identify other silver grades in use.

In a loan agreement dated c. 487 BC (*TAD* 4.2), we find the usual weight-quality formula (here the weight standard is the “stones of Ptah” rather than the “stones of the King”), but this time the alloy quality is $\text{ל} \text{ש} (1 \text{ sh(ekel) to the } 10)$, or 90% pure.³⁴ We can identify therefore at least two different grades of silver in monetary use in fifth-century Egypt: 90% and 95% fineness. As noted above, Near

31. These are, with their *TAD* citations: a) $\text{לְשֵׁרֶתָא} // \text{ר} (2 \text{ q(arters) to (the) } 10)$: B2.2: 15; B2.6:7, 14; 3.8:32; b) $\text{לְכַרְשׁ} // \text{ר} (2 \text{ q(arters) to } 1 \text{ karsh})$: B2.9:15; 2.10:16; 3.5:15; 6.1:5; c) $\text{לְשֵׁרֶתָא} \text{ זֶרָא} (zuz \text{ to the } 10)$: B3.4:15; 3.8:17; 3.9:8; d) $\text{ל} \text{ש} (zuz \text{ to (the) } 10)$: B3.4:18; e) $\text{לְכַרְשׁ} (zuz \text{ to } 1 \text{ karsh})$: B3.4:6; 5.5:3. A *zuz* was 1/2 a shekel; ten shekels equaled a *karsh*.

32. Porten (1986: 161, n. 39): “It probably meant that a half shekel (= a *zuz*) had to be added to every Persian *karsh* (= 10 shekels) to bring its weight of 83.33 g up to the weight of 87.6 g (= 10 x 8.76 g, the weight of the Egyptian shekel).”

33. Porten (1968: 64–65) seems to have devised the existence of the “Egyptian” shekel from Aramaic texts (e.g., *TAD* B3.1:14; A4.2:12; B4.5:3; 4.6:7) where the Athenian tetradrachm is said to be the equivalent of two shekels. Wrongly assuming the tetradrachm standard to be 17.52 g, Porten arrives at an “Egyptian” shekel of 8.76 g (i.e., 17.52 g ÷ 2). The actual Athenian standard is closer to 17.20 g; also the half gram difference between 16.70 g (a shekel of 8.35 g x 2) and 17.20 g was likely overlooked in most transactions because of the convenience factor of having a coin so near a useful weight. Why the *stater* in these texts must be the Athenian tetradrachm and no other coins is explained by Naster (1970).

34. Porten (1986: 257, n. 7) again sees this as an attempt to reconcile two weights systems: “To bring the weight of the lighter Persian *karsh* = 10 shekels in line with that of the Ptah *deben* = 10 *kite* (1 *kite* = 9.53 g), one Ptah shekel was added for each *karsh*.”

Eastern parallels for two and even three recognized grades of (monetary) silver are not lacking, making the use of multiple grades of silver in Egypt an acceptable notion.³⁵ A third Egyptian grade is seemingly lurking in the phrase כסף צריר (*ksf tzrip*, “pure/refined silver”), which likely refers to a grade of silver of greater purity than 90% or 95%, i.e., one approaching 100% fine (see Naster 1970: 33). The Aramaic and Biblical Hebrew verbal root צרר (*tzrp*) refers primarily to the refining of gold and silver.³⁶ Porten’s translation of the term *ksf tzrip*, “pure silver,” rightly carries the connotation that the silver specified has been refined (צריר, *tzrip*) beyond what one might expect of “normal” silver (כסף, *ksf*), presumably the other two grades. In the documents that we have, however, all but one of the references to *ksf tzrip* occur in the contracts written by the scribe Haggai son of Shemiah, which all date to the end of the fifth century.³⁷ One could argue that the term was idiosyncratic, a personally devised variation for “2 q(uarters) to (the) 10,” or 95% fine, already an impressively fine grade. But problems in this argument arise from the fact that Haggai used “2 q(uarters) to (the) 10” from time to time as well (e.g., TAD 3.4.6; actually in this case “zuz to 1 *karsh*”), suggesting that for the scribe and his customers, the two phrases had different meanings. The sole other reference to *ksf tzrip* is found in the wall agreement noted above (TAD B2.1.7, 471 BC), which antedates Haggai’s work by nearly seven decades. The considerable time difference suggests that Haggai was using a technical phrase that had been developed at least by the 470s to refer to a special high grade of silver. Corroboration that a grade of silver of c. 100% existed in early fifth-century Egypt is found in Herodotus.

In book four of the *Histories* (4.166), Herodotus relates how the Persian hyparch of Egypt, Aryandes, was put to death as a rebel for attempting to leave a monument of himself (μνημόσυνον ἑωυτοῦ) comparable to Darius’ highly refined gold coinage; Aryandes’ “monument” was an equally highly refined silver; even in Herodotus’ day (c. 440 BC) such silver was called “Aryandic” (καὶ νῦν ἐστὶ ἀργύριον καθαρώτατον τὸ Ἀρυανδικόν). Commentary on this passage has been extensive, drawing the attention of a range of specialists with different interests

35. Significantly, the Athenian tetradrachm might have counted as a grade in and of itself. In a real estate contract dated 13 December 402 (TAD 3.12), the price paid for the apartment in question was 13 shekels, which is spelled out in the usual formula (Ins. 5–6, metal + weight + quality), except that in place of one of the phrases denoting quality we find: שֶׁקֶל /// סְתִירִי כֶסֶף יוֹן (“(in) Ionian silver 6 staters, (plus) one shekel”). One reason Athenian tetradrachms might have been accepted as coins (as here), rather than simply treated as bullion, was their consistently pure silver, which likely was noted by the inhabitants of Egypt at some point in the fifth century. For the use of “(Ionian) stater” in contemporary demotic documents see Chauveau (2000).

36. See Levene and Rothenberg 2004: 196–201. Cf. Jeremiah 6.29–30.

37. TAD 3.6:15; 3.10:20; 3.11:11; 3.12:30; also B2.11:11; 3.13:6.

and agendas.³⁸ Often at the core of the discussions, however, is the question of whether or not Aryandes took his highly refined silver and minted coins out of it. Herodotus does not explicitly say that he did, whereas he does say that Darius minted coins out of his gold (Δαρειός μὲν γὰρ χρυσίον καθαρώτατον ἀποψήσας ἐς τὸ δυνατότατον νόμισμα ἐκόψατο). Christopher Tuplin (1989) has made the most forceful argument to date defending the view that Aryandes minted coins, a view that has been mostly dismissed (see Howgego 1995: 47). No Egyptian-made coins have yet been found that can be attributed to him; what evidence we have indicates that minting in Egypt did not begin until the fourth century (van Alfen 2002a). At the conference where the paper was first presented, Martin Price responded none too favorably to Tuplin’s argument (his comments can be found on pp. 82–83 of Tuplin’s published paper), convinced instead that Aryandes had “somehow created very pure silver” and perhaps “passed an edict insisting upon the purity of silver that would be required for taxes and tribute.” Furthermore, whatever “Aryandic silver” Herodotus may have seen was likely in ingot form. Price’s offhand yet worthwhile comments require further explication.

The monetary use of silver in Egypt predated the arrival of the Achemenids by centuries, if not millennia (Daumas 1977), but the fineness of this silver might not always have been particularly high (Tuplin 1989: 75), as was the case in Babylonia (Joannes 1994). Shortly after their assumption of power in Egypt, the Achemenids set about reorganizing age-old Egyptian institutions to suit their own needs and purposes, which of course included taxation and Egypt’s annual tribute to the Great King (Bresciani 1985). As we have already seen, in Darius’ reign there was a new-found concern over the fineness of the tribute silver received at the central treasury in Persia; this concern might have filtered down to local rulers and satraps. In Egypt, it is not unreasonable to think that Aryandes championed the need for the purest possible grade of silver, by assaying and refining the silver he received as taxes before sending it to Persia, or indeed by simply insisting that any silver turned over to the state be “pure” (καθαρώτατον/ צריר), i.e., close to 100% fine, in order to ease accounting and managing issues. Such a program in turn might have raised the bar of expectation in Egypt generally about what levels of metal quality were permissible in certain types of transactions. In the end, it would make sense that the most highly refined silver in Egypt received the nickname “Aryandic” after the first Persian ruler, the one who initiated the new protocols, or who, in Price’s view, issued the edict. Whether or not this silver was the actual cause of the satrap’s downfall, as Herodotus insists, is impossible to tell (see Zournatzi 2000: 259; Howgego 1995: 47).

38. See, for example, Tuplin (1989); Howgego (1995: 46–47); Kurke (1999: 68–80); and Zournatzi (2000: 258–259).

Since “Aryandic silver” then was simply the highest grade of silver, what form it took made little difference, although we can be confident that it was not minted into coins. The lack of numismatic evidence aside, for Aryandes to have produced coins, presumably for circulation within Egypt, meant that the Egyptians were ready to recognize and use coins as coins. There is not much evidence from late sixth or early to mid-fifth-century Egypt to indicate that this was the case. The physical evidence—the hoards—shows a continued healthy use of bullion all through the Persian period, not just at the beginning of the period; they also show how often coins that found their way to Egypt were chopped to pieces, no less than other pieces of bullion. Both practices, which point to an economic framework different from that operating in the (coin-monetized) Aegean, are virtually unseen in (Classical) Aegean hoards. More telling, however, are the documents from Elephantine.

It is only at the end of the fifth century that the first hints of a shift to using coins as coins begin to appear, in references to “(Ionian) staters” being used in monetary contexts, where it is clear that the coins are being handled whole as coins (see notes 32 and 34, and Chauveau 2000). In texts of slightly earlier date, where we find an occasional reference to actual payments or possession of silver, the amounts are not easily reconcilable with whole coin weights or denominations. For example, a marriage contract from 420 BC (*TAD* B3.8.5–6) records how the wife brought with her into her husband’s house silver weighing two *karsh*, two shekels, and five *hallurs* (= 22.125 shekels = 183.64 g, with a shekel of 8.3 g), a sum not easily reduced to whole Athenian tetradrachms.³⁹ Should this same wife divorce “she shall place upon the balance scale and give to her husband Ananiah silver, 7 shekels, [2] q(uarters)...” (trans. Porten),⁴⁰ a penalty couched in traditional language, but likely reflecting the still current practice of weighing out bullion in transactions. Pseudo-Aristotle (*Oec.* 2.2.25) further suggests that even well into the fourth century the shift was not complete, that bullion continued to play an important role in the Egyptian economies: he notes that in order to finance his campaign in the Levant, the Egyptian ruler Tachos (363/2–362/1 BC) raised taxes on the Egyptians and stated that his preference for payment was uncoined (*asêmon*) silver and gold, which implies that bullion was still readily found in circulation.⁴¹

39. It does, however, equal fifteen Aeginetan staters of 12.2 g, which are found in some number in Egyptian hoards (e.g., *IGCH* 1637, 1639, 1640, 1644, 1645, 1646, 1647, 1650, 1652). But if this lot of silver was comprised solely of fifteen staters, we can be certain this would have been noted in the document.

40. Ln. 26: [///]ר \\\ \\\ שקלך כסף צנניה לכצלה ותנתן מוחנא ותנתן לכצלה צל מוחנא ותנתן לכצלה צל מוחנא. Also note that the sum 7.5 shekels (= 62.25 g) cannot be reduced to whole Athenian tetradrachms.

41. It is worth noting that a series of gold staters apparently issued by Tachos’ successor, Nectanebo II (361/60–343) bear hieroglyphs meaning “good gold” (*nefer nub*); see van

It is within this context of the widespread use of monetary bullion of differing grades, and concern and control over these grades in different transactions, both at the state and personal level, that the random weights and shapes of the ingots and dumps discussed earlier are best explained. Unlike gold, which can be tested fairly accurately for purity with the aid of a touchstone and needles, no such ready test was available for silver, at least not until late in the fourth century.⁴² The only recourse left to those intent upon knowing the quality of the silver in their possession was fire, to melt all or a portion of it for assay.⁴³ There was not always need for an elaborate assay method like cupellation, however; it was already observed in antiquity that silver of c. 97–100% purity bubbled in a particular way when melted (Aristotle *Problemata* 936b). Observers would have surely noted how silver of the same purity forms blisters and extrusions on the surface of the metal as it cools (Conophagos et al. 1976: 10–11). Pliny (*HN* 33.44) also mentions a rudimentary test for silver purity using fire that was likely known long before his time (first century AD): melted silver that remains perfectly white is of good quality, if it turns red it is of the next quality, but if it turns black it is no good.⁴⁴ With access to a hot fire (hotter than the 961 °C melting point of silver) and something to melt the silver in or on, anyone could have gained a reasonable understanding of the purity of a questionable piece of silver; any lot of miscellaneous pieces of Hacksilver, perhaps a lot that formed a single payment for an item or service, could have also been quickly melted and tested together. The result of so many melts and tests, especially when removed from the context of state control and standardization,

Alfen (2002a: 23–24). It may be inferred that even when these coins were minted in the mid-fourth century the bullion-oriented concern for metal quality still prevailed to such an extent that for these coins to be accepted they had to carry a statement about their quality.

42. Theophrastus (*De lapidibus* 46) claims that a recently discovered (ἐὺρήσθαι...νῦν, i.e., end of the fourth century) stone was capable of discovering a grain (κριθή, 0.06 g) of impurities within gold or silver stater; for commentary see Bogaert (1976: 10–11).

43. In 199 BC, for example, the Romans tested the first installment of 200 talents of the 10,000 talents Carthaginian indemnity payment by fire and found it to have a purity of only 75%: *Carthaginienses eo anno argentum in stipendium impositum primum Romam aduexerunt. Id quia probum non esse quaestores renuntiaverunt experientibusque pars quarta decocta erat, pecunia Romae mutual sumpta intertrimentum argentii expleuerunt* (Livy 32.2.2). Also note Theognis 499–500, which dates a few centuries earlier: ἐν πυρὶ μὲν χρυσὸν τε καὶ ἄργυρον ἴδρες ἄνδρες/ γινώσκουσ’ (“in fire clever men come to know gold and silver”).

44. *Vatillis ferries candentibus ramento inposito, quod candidum permaneat, probatur; proxima bonitas rufo, nulla nigro*. Pliny, of course, mentions the use of silver shavings and a red hot spatula to perform the test. A couple of centuries later, in a third-century AD Egyptian alchemical text, a similar test is mentioned, but is more expansive in its description than Pliny: “Heat the silver or melt it, as with gold; and if it remains white and brilliant, it is pure and not false; if it appears black, it contains some lead; if it appears hard and yellow, it con-

would be precisely what we see in the hoard record: dumps and ingots of random sizes and weights. This is not to say that all transactions required that silver be tested in this way. That is clear enough in the Elephantine documents, where we hear of transactions taking place where no such tests occurred or were required; transactional efficiency in places like markets would have necessitated some degree of confidence in the quality of the smaller pieces of Hacksilber (and coins?) in rapid circulation. Only when there was a stipulated need for a verified grade of metal, like tax or contractual payments, or in cases where doubt prevailed, would the silver be subjected to fire. It is not too difficult to see then how this level of personal control would have caused constant flux in the physical shape of the money supply and so imparted such a distinctive character to Egyptian and more broadly Near Eastern hoards of the Persian period.

Before returning to the new ANS ingot hoard, there are a few final observations to make about the Egyptian and Levantine hoards in general. A glance at Figures 1–4 shows that by far the greatest proportion of both complete and incomplete ingots and dumps have weights below 20 g. The proportions continue to stay fairly high below 10 g, but drop off below 5 g, except in the case of fragmentary pieces in the Levant, where 38% of that group falls below 5 g. For Egypt the bulk of the bullion money supply, at least as far as we can tell from the hoards we have, had weights that were concentrated between 5 and 20 g. Conversely, in the Levant, bullion weights were concentrated between 1 and 10 g. How suggestive these figures might be regarding prices and small-scale transactions depends ultimately on the overall quality of the hoard evidence, which is not high. Nevertheless, the preponderance of lower-weight pieces suggests that bullion silver was used extensively in smaller, daily transactions throughout the Persian period.⁴⁵

At the other end of the spectrum, a significant number of large ingots are also found in the hoards (see Figures 1–4). The penalties in the Aramaic contracts are often quite steep, from 5 to 20 *karsh* (c. 416 g to 1666 g silver), designed obviously to keep the contractors in line. We cannot know how often contracts were broken and penalties paid, but in such cases a large ingot, one perhaps formed on the

tains some copper” (Leyden Papyrus 10.44).

45. Note Reade’s (1986: 41) comments about the contents of the fifth-century Babylonian hoard: “If then the content of this hoard reflect the owner’s normal practice, he could have carried out most of his ordinary transactions with ‘small change’ (pieces under two shekels), of which he had 23 1/2 shekels’ worth in his hoard. He had an additional 15 1/2 shekels’ worth in pieces weighing over two but less than ten shekels...” Back in Egypt, various marriage contracts from Elephantine list dowry items along with their values in silver, which if they correlate to actual prices would reflect a real need for small change. See, for example, *TAD* B3.3.5 (449 BC), which lists a mirror worth 7 1/2 *hallurs* (0.19 shekels, or c. 2 g); it also lists a woolen garment worth 7 shekels (58.1 g).

46. This is well illustrated by a customs account (*TAD* C3.7) dated 475 BC that records the

spot by melting pieces of Hacksilber, might have changed hands. In one document (TAD A4.4) dating to the last decade of the fifth century, we hear how the leaders of the Elephantine community were fined 1200 shekels (c. 9960 g) of silver; again payment might have been made using large ingots.

CONCLUSIONS

In mid-fifth-century Egypt, the use of silver as money was extensive, but the use of coins as coins was not. The land had no natural silver resources so the Egyptians were compelled to draw the metal in from outside through trade and port taxes.⁴⁶ Since the Egyptians had no coinage of their own until well into the fourth century, they had no need throughout most of the Persian period to subsequently melt and re-coin the incoming silver; thus Greek and Levantine coins circulated freely, sometimes for decades, treated mostly as bullion, occasionally as coins. At some point in the second half of the fifth century, Athenian tetradrachms began to acquire a special status, likely because of their good metal and weight, but also perhaps because the owls simply outnumbered all other coin types combined in Egyptian circulation. Acceptance of Athenian (and other?) coins as coins gradually became more commonplace and so in some areas the Egyptians began to align themselves functionally with their coin-using silver suppliers in the Aegean and elsewhere. Nothing about the new ANS hoard changes this picture, although it is clear that the special status of Athenian coinage was not yet fully developed when the hoard closed; Athenian coins nos. 9–10 are fragmented, and no. 6 is partially melted. Again, it is the ingots that make the hoard significant.

Ingots and Hacksilber have, of course, been found in numerous Persian period Egyptian hoards, but none of the bullion pieces yet recorded are of the size and weight of the pieces from this hoard (see Figures 1–4); in fact our 1462.98 g specimen (no. 24) is the largest intact cake ingot known from any sixth through fourth century BC hoard anywhere. Very large ingots, or large fragments from still larger ingots, are known from contemporary Levantine and Western Greek hoards,⁴⁷ but again nothing comparable has yet been recorded from Egypt. The deep cuts on the two smaller ingots (nos. 25–26), indicative of a form of control within an exchange context, surely mean that these ingots had been used as money in a transaction. If, as argued above, ingots were sometimes produced by private parties to pay specific

taxes in gold and silver paid by Greek and Phoenician ships at some unnamed Egyptian port; for a summary see Yardeni (1994), and for an extensive commentary see Briant and Descat (1998).

47. See especially the "Antilebanon" hoard (CH 8.45) which contained a monster 2,532 g bar ingot; the Taranto hoard (IGCH 1874) also contained large fragments of ingots that must have weighed, when complete, several thousand grams.

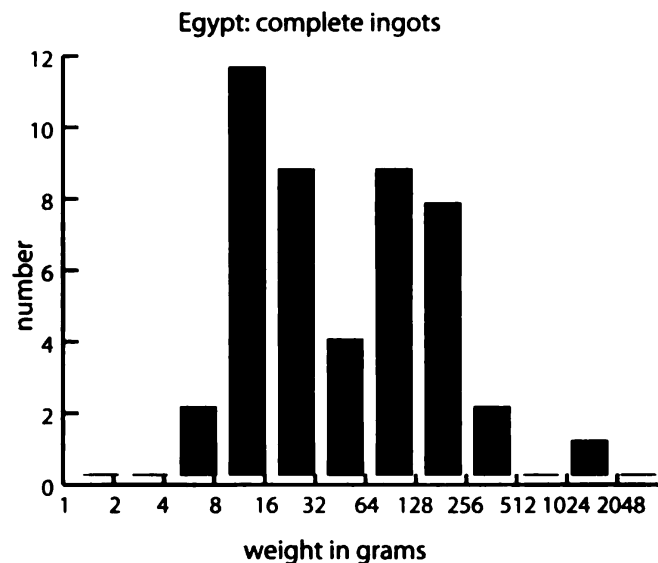
48. Both the Taranto (IGCH 1874) and Silenus (Arnold-Biucchi et al. 1988) hoards con-

debts, it could well be that each of these ingots had changed hands at least once before the cuts were made. Having left the possession of the original recipients, who may have witnessed the production of the ingots and so knew their quality, they came into the possession of others who did not know their quality, who accepted the ingots only after cutting into them. The lack of standardization among these three pieces and lack of official marks both suggest private production and use rather than payments emanating from the satrapal treasury.⁴⁸ The significance of these three ingots then lies in the evidence they provide for bullion transactions of a considerable scale existing outside of the official exchequer.

ACKNOWLEDGEMENTS

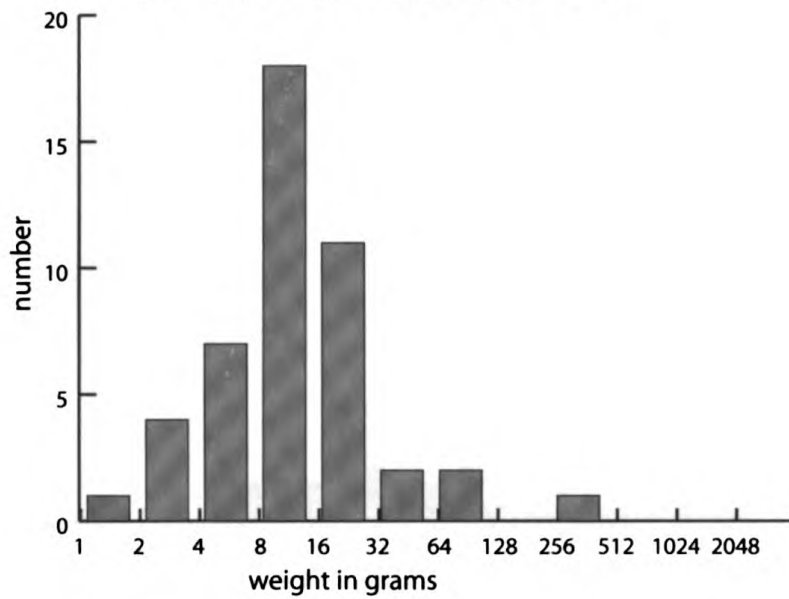
I thank John Kroll, Emily Mackil, and Oliver Hoover for their comments on earlier drafts of the paper, and Jonathan Kagan and Arnold-Peter Weiss for their assistance. All shortcomings, of course, remain my own.

FIGURES 1–4: INGOT AND HACKSILBER WEIGHTS

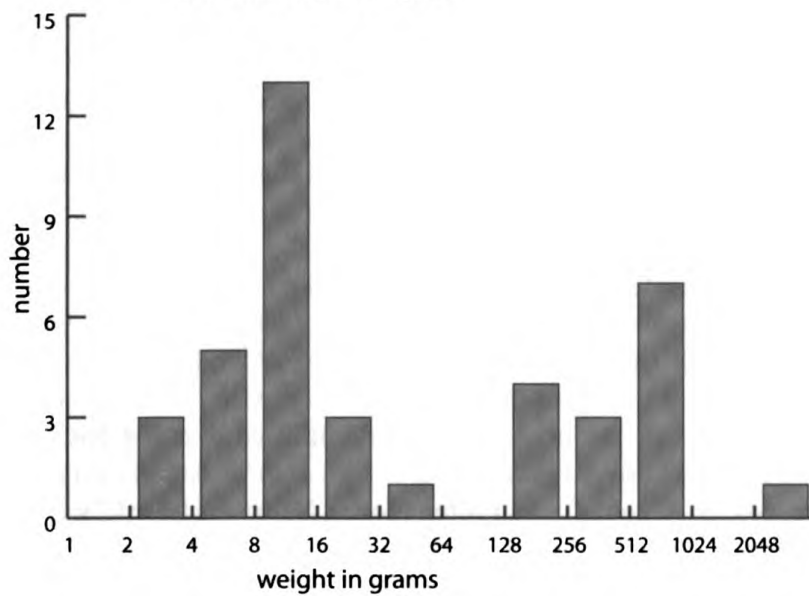


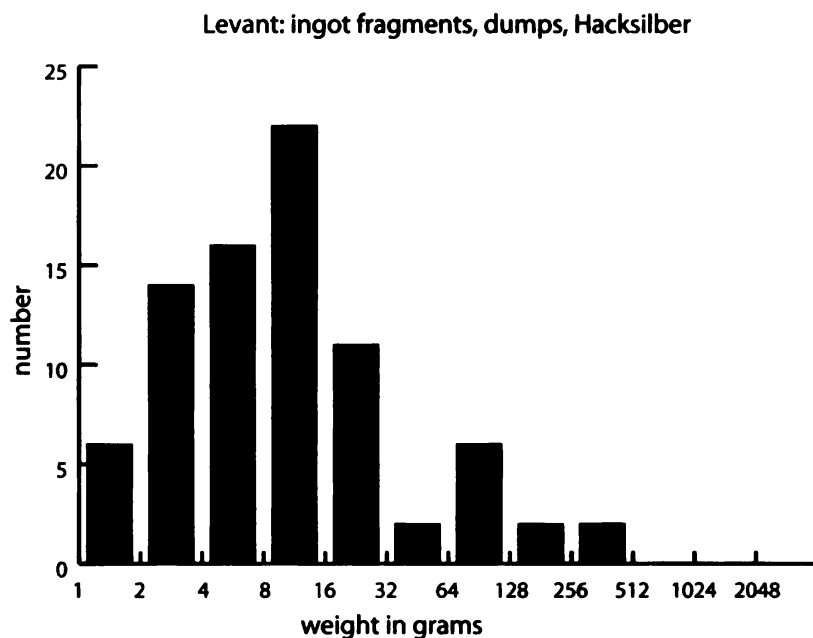
tained ingots with stamps that mimic known coin types, which may indicate the hand of an authority in their manufacture or verification. From the earlier “Black Sea” hoard (*CH* 1.15) came a cuneiform-inscribed ingot or sheet fragment reading “Made in the palace of Darius the King;” see Kraay and Moorey (1981: no. 137).

Egypt: ingot fragments, dumps, Hacksilber



Levant: complete ingots





TABLES 1–5: HOARD EVIDENCE

The hoard evidence presented here is divided first geographically—Cilicia, the Levant, and Egypt—and second chronologically into the Archaic (c. 525–480 BC) and Classical (480–c. 330 BC) periods. No Archaic hoards from Cilicia have been published. Furthermore, none of the contemporary hoards from Cyprus (*IGCH* 1272–1280; *CH* 6.10; 6.13; 8.140; 9.378) contains coins validated in any fashion, nor do they contain ingots or Hacksilber. Thus there are no lists for Archaic Cilicia or for Cyprus.

The hoards considered are listed under “Reference” in rough chronological order with an abbreviated designation. Any four-digit number (e.g., 1177) refers to hoards found in *IGCH*; thus “1177” is *IGCH* 1177. All other figures, e.g., “5.15,” refer to hoards listed in one of the nine volumes of *CH*; “5.15” therefore is *CH* volume 5, hoard no. 15. An occasional hoard not listed in either *IGCH* or *CH* is noted: “But. 1982” = Buttrey (1982), Karanis; “Kr. 2001” = Kroll (2001); “Pf. 2000” = Pfister (2000); “v. A. 2002a” = van Alfen (2002), Nahman’s hoard; “v. A. 2002b” = van Alfen (2002), Endicott’s hoard; “v. A. 2005a” = van Alfen (2005); “v. A. 2005b” = the hoard under consideration in this article.

Under the titles “cut coins,” “countermarked coins,” “fragmented coins,” and “plated coins,” the percentage given represents a proportion of the total number of coins found in the hoard. A “?” indicates that there are examples in the hoard but their proportion or number is not known. The total number of complete ingots and dumps is listed under their respective heading; all other incomplete ingots, Hacksilber, and jewelry pieces are under “Total no. misc. Hacksilber.”

Table 1. Cilicia

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
1177	38	39%						
1252	32+							
1254	18		5%					
1255	1300+							
1256	9+	10%						
5.15	300+		?					
1258	35							
8.91	436+							
9.390	435+							
8.93	18+	45%						
6.11	31+		100%					
1259	141	72%	34%	2%				
1260	100							
1261	16+							
2.36	53+							
1263	145+							
1264	300							
8.100	52							

Table 1. Cilicia Continued

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
9.402	350+							
9.416	57							
3.16	200+							
1265	15+							
1.30	6							
9.471	206+							
8.127	8							
9.45	54+							
9.417	206+							
1267	1000							
1268	7+							
7.44	100+							
8.164	15							
8.165	41							

Table 2. Archaic Levant

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
1478	39	2%				2		6
1479	16							
1480	2+							
Kagan 1994	66	61%						

Table 3. Classical Levant

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
8.45	70	4%		4%		12		7
7.16	5+	?		60%				
1481	4							
9.356	13	7%		7%				5
1482	113	4%		58%			1	9
8.59	76							
9.363	16+	12%						
1.15	108+	60%	9%	39%		13		24
1483	100	14%		55%	1%		1	3+
Pf. 2000	782	16%		11%		8	8	101
1484	100							
8.29	16							
9.386	27			7%	7%			?
1485	7							
1486	55							
1487	25	8%						
1488	43	39%	12%					2+
1489	510							

Table 3. Classical Levant Continued

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
8.98	36+							
1490	?							
9.405	100+	1%	50%					
9.406	50+							
8.118	400							
8.120	12+							
1491	8							
1492	8							
9.413	334	?			1%			24
2.48	5							
1493	30							
1494	169							
8.133	16	38%	25%					
9.422	150+	3%	72%					
8.144	14+							
7.40	2							
9.428	12+							
9.429	50+							

Table 3. Classical Levant Continued

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
9.430	20							
8.149	50							
8.150	34							
8.152	100+							
8.154	3+							
8.156	12							
9.432	394							
9.433	160							
1495	114							
1496	217							
1497	?							
1498	30							
1499	70							
9.437	68							
9.438	439							
9.441	17		?					
1500	27							

Table 3. Classical Levant Continued

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilver
1501	25	1%						
1502	109		1%					
1503	3							
1504	965			1%				?
1505	60+	?	?					
1507	114+							
v. A. 2005a	76+	51%	13%				2	
9.446	?							
9.456	36	78%	25%					
9.369	31							
9.372	200							
9.373	1601+							
9.374	?							
8.81	185							
2.47	25	?						

Table 4. Archaic Egypt

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
1632	5							
1634	4							
1635	?							
1636	23	4%		43%		9		1
1637	165	10%		3%		2?		
1638	30	?						
1639	72	39%		?		?		
2.10	14+					5?		
1640	77			32%		12		2
1.7	23			9%		1		18?
1641	4							
1642	5	?						
1643	4							

Table 5. Classical Egypt

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
1644	867	40%		10%		2		2
1645	84	56%		5%		11	5	2
1646	15	26%		13%				
8.57	18							
1647	15	?						
Kr. 2001	2	50%		?		3	3	11
v.A. 2005b	19	47%		58%		3	2	2
1648	67							
1649	6000+	?			?	?		
1650	12	44%					2	1
1651	82+	?		?	1%			7
1652	83	6%		?		?		
8.125	201							
1653	2							
v.A. 2002a	9+							
v.A. 2002b	15+		100%?					
But. 1982	347							
8.151	4		?					

Table 5. Classical Egypt Continued

Reference	Total no. of coins	Cut coins	Countermarked coins	Fragmented coins	Plated coins	Total no. complete ingots	Total no. complete dumps	Total no. misc. Hacksilber
1654	11+							
1655	4							
1656	9+							
1657	60							
1658	38							
1659	52		42%		9%			
1660	39	13%	49%		2%			
1661	12							
1662	60							
1663	700+	29%	80%					

REFERENCES

- Arnold-Biucchi, C., L. Beer-Tobey, and N.M. Waggoner. 1988. A Greek archaic silver hoard from Silenus. *American Numismatic Society Museum Notes* 33: 1–35.
- Babelon, E. 1901. *Traité des monnaies grecques et romaines*, vol. I. Paris: Ernst Leroux.
- Bivar, A. D. H. 1971. A hoard of ingot-currency of the Median period from Nush-i Jan, near Malayir. *Iran* 9 (1971): 97–111.
- . 1985. Achaemenid coins, weights and measures. *The Cambridge history of Iran. Vol. II. The Median and Achaemenian periods*, pp. 610–639. Cambridge: Cambridge University Press.
- Bogaert, R. 1976. L'Essai des monnaies dans l'antiquité. *Revue belge de numismatique* 122: 5–34.
- Bresciani, E. 1985. The Persian occupation of Egypt. *The Cambridge history of Iran. Vol. II. The Median and Achaemenian periods*, pp. 502–528. Cambridge: Cambridge University Press.
- Briant, P. 2002. *From Cyrus to Alexander: a history of the Persian Empire*. Winona Lake, Indiana: Eisenbrauns.
- Briant, P. and R. Descat. 1998. Un registre douanier de la satrape d'Égypte à l'époque achéménide. In: N. Grimal and B. Menu, eds. *Le commerce en Égypte ancienne* (IFAO: Cairo): 59–104.
- Buttrey, T.V. 1982. Pharaonic imitations of Athenian tetradrachms. In: T. Hackens and R. Weiller, eds., *Proceedings of the 9th International Congress of Numismatics, Berne, September 1979*, vol. I, pp. 137–140. Louvain-la-Neuve and Luxembourg: Association Internationale des Numismates Professionnels.
- Chauveau, M. 2000. La première mention du statère d'argent en Égypte. *Transeuphratène* 20: 137–143.
- Conophagos, C.E., H. Badecca, and C. Tsaimou. 1976. La technique athenienne de la frappe des monnaies à l'époque classique. *Nomismatika Chronika* 4: 4–33.
- Conophagos, C.E. 1980. *Le Laurium antique et la technique grecque de la production de l'argent*. Athens: Ekdotiki Hellados.
- Cowley, A. 1923. *Aramaic papyri of the fifth century B.C.* Oxford: Clarendon Press.
- Daumas, F. 1977. Le problème de la monnaie dans l'Égypt antique avant Alexandre. *Mélanges de l'École Française de Rome Antiquité* 89.2: 425–441.
- De Callatay, F. 2000. Les monnayages ciliciens du premier quart du IV^e s. av. J.-C. In: O. Casabonne, ed., *Mécanismes et innovations monétaires dans l'Anatolie achéménide: numismatique et histoire: actes de la table ronde internationale d'Istanbul*, 22–23 mai 1997, pp. 93–127. Paris: Institut français d'études anatoliennes d'Istanbul.
- . 2003. Review: Pfisterer 2000. *Revue Belge de Numismatique* 149: 267–272.
- Destrooper-Georgiades, A. 1984. Le trésor de Larnaca (IGCH 1272) réexaminé.

- Report of the Department of Antiquities Cyprus*, pp. 140–161.
- Dressel, H. and K. Regling. 1927. Zwei ägyptische Funde altgriechischer Silbermünzen. *Zeitschrift für Numismatik* 37: 1–138.
- Elayi, J. and A.G. Elayi. 1993. *Trésors de monnaies phéniciennes et circulation monétaire* (Ve-IVe siècle avant J.-C.). Paris: Gabalda.
- Elayi, J. and A. Lemaire. 1998. *Graffiti et contremarques ouest-sémitiques sur les monnaies grecques et proche-orientales*. Glax 13. Milan: Edizioni ennerre S.r.l.
- Elayi, J. and J. Sapin. 1998. *Beyond the River: New Perspectives on Transeuphratene*. Sheffield: JSOT Supplement Series 250.
- Figueira, T. 1998. *The power of money: coinage and politics in the Athenian Empire*. Philadelphia: University of Pennsylvania Press.
- Gitin, S. and A. Golani. 2001. The Tel Mique-Ekron silver hoards: The Assyrian and Phoenician connections. In: M. Balmouth, M., ed. *Hacksilver to coinage: New insights into the monetary history of the Near East and Greece*, pp. 27–48. The American Numismatic Society Numismatic Studies 24. New York.
- Harris, D. 1995. *The treasures of the Parthenon and Erechtheion*. Oxford and New York: Oxford University Press.
- Hendin, D. 2001. *Guide to Biblical coins*. 4th edition. New York: Amphora.
- Howgego, C. 1995. *Ancient history from coins*. London: Routledge.
- Kagan, J. 1994. An archaic Greek coin hoard from the eastern Mediterranean and early Cypriot coinage. *Numismatics Chronicle* 154: 17–52.
- Kim, H. 2001. Archaic coinage as evidence for the use of money. In: A. Meadows and K. Shipton, eds. *Money and its uses in the ancient Greek world*, pp. 7–22. Oxford.
- Kraay, C.M. and P.R.S. Moorey. 1981. A Black Sea hoard of the late fifth century BC. *Numismatic Chronicle* 141: 1–19.
- Kreling, E.G. 1953. *The Brooklyn Museum Aramaic papyri: New documents of the fifth century B.C. from the Jewish colony at Elephantine*. New Haven: Yale University Press.
- Kroll, J. 1993. *The Greek coins*. Athenian Agora 26. Princeton: American School of Classical Studies in Athens.
- . 2001. A small bullion find from Egypt. *American Journal of Numismatics* 13: 1–20.
- Kurke, L. 1999. *Coins, bodies, games, and gold: the politics of meaning in archaic Greece*. Princeton: Princeton University Press.
- Le Rider, G. 1975. Contremarques et surfrappes dans l'Antiquité grecque. In: *Numismatique antique: problèmes et méthodes*, pp. 27–56.
- . 2001. *La naissance de la monnaie: pratiques monétaires de l'Orient ancien*. Paris: Presses universitaires de France.
- Le Rider, G. and S. Verdan. 2002. La trouvaille d'Eretrie: réserve d'un orfèvre ou

- depot monétaire? *Antike Kunst* 45: 141–152.
- Levene, D. and B. Rothenberg. 2004. Word-smithing: some metallurgical terms in Hebrew and Aramaic. *Aramaic Studies* 2.2: 193–206.
- Meshorer, Y. and S. Qedar. 1999. *Samaritan Coinage*. Jerusalem.
- Mørholm, O. and J. Zahle. 1972. The coinage of Kuprilli: numismatic and archaeological study. *Acta Archaeologica* 153 (1972): 57–113.
- Naster, P. 1970. KARSHA et SHEQEL dans les documents araméens d'Eléphantine (Ve siècle avant J.-C.). *Revue Belge de Numismatique* 116: 31–35.
- Newell, E.T. 1914. A Cilician find. *Numismatic Chronicle* 14: 1–33.
- Nicolet-Pierre, H. 1998. Autour du décadrachme athenien conservé à Paris. In: Richard Ashton, et al., eds. *Studies in Greek numismatics in memory of Martin Jessop Price*, pp. 293–299. London: Spink.
- Pfisterer, M. 2000. *Ein Silberschatz vom Schwarzen Meer: Beobachtungen zum Geldumlauf in Achaimenidenreich*. Studia Iranica cahier 22. Paris: Associations pour l'avancement des études iraniennes.
- Porten, B. 1968. *Archives from Elephantine: the life of an ancient Jewish military colony*. Berkeley: University of California Press.
- Porten, B., et al. 1996. *The Elephantine papyri in English: three millennia of cross-cultural continuity and change*. Leiden: Brill.
- Price, M. and N. Waggoner. 1975. *Archaic Greek coinage: the Asyut hoard*. London: V.C. Vecchi and Sons.
- Raymond, D. 1953. *Macedonian regal coinage to 413 BC*. Numismatic Notes and Monographs, no. 126. New York: American Numismatic Society.
- Reade, J. 1986. A hoard of silver currency from Achaemenid Babylon. *Iran* 24: 79–87.
- Robinson, E.S.G. 1935. Notes on the Larnaca hoard. *Numismatic Chronicle* 15: 180–190.
- Seaford, R. 2004. *Money and the early Greek mind: Homer, philosophy, tragedy*. Cambridge: Cambridge University Press.
- Sheedy, K. 1999. The Idalion stater found in a tomb in Marion in 1886. *Numismatic Chronicle*, 159: 281–284.
- Singer-Avitz, L. 1989, "Stone and clay objects," in Herzog, Z., G. Rapp, Jr., O. Negbi, eds., *Excavations at Tel Michal, Israel*, pp. 350–360. Tel Aviv: Tel Aviv University.
- Starr, C.G. 1970. *Athenian coinage, 480–449 BC*. Oxford: Clarendon Press.
- Stroud, R.S. 1974. An Athenian Law on Silver Coinage. *Hesperia* 43: 157–188.
- Troxell, H. 1994. *Sylloge nummorum Graecorum: The collection of the American Numismatic Society, part 8. Macedonia II: Alexander I–Philip II*. New York: American Numismatic Society.
- Tuplin, C. 1989. The coinage of Aryandes. In: R. Descat, ed. *L'or perse et l'histoire*

- greque. Table ronde CNRS, Bordeaux, 20–22 Mars 1989. *Revue des études anciennes* 91.1–2: 61–82.
- Van Alfen, P.G. 2002a. The “owls” from the 1989 Syria hoard, with a review of pre-Macedonia coinage in Egypt. *American Journal of Numismatics* 14: 1–58.
- . 2002b. Two unpublished hoards and other owls from Egypt. *American Journal of Numismatics* 14: 59–71.
- . 2005a. Problems in ancient imitative and counterfeit coinage. In: Z. Archibald, J. Davies, and V. Gabrielsen, eds., *Making, moving, and managing: the new world of ancient economies, 323–31 BC*. London: Oxbow.
- . 2005b. A new Athenian “owl” and bullion hoard from the Near East. *American Journal of Numismatics* 16/17: 47–62.
- Vismara, N. and R. Martini. 2000. Ripostigli con monete della Lycia, di Cyprus e della Phoenicia. Spunti per una discussione. *Transeuphratène* 20: 45–60.
- Yardeni, A. 1994. Maritime trade and royal accountancy in an erased customs account from 475 BCE on the Ahiqar scroll from Elephantine. *Bulletin of the American Schools of Oriental Research* 293: 67–78.
- Zournatzi, A. 2000. The processing of gold and silver tax in the Achaemenid empire: Herodotus 3.96.2 and the archaeological realities. *Studia Iranica* 29: 241–271.

A New Athenian “Owl” and Bullion Hoard from the Near East

PLATES 6–13

PETER G. VAN ALFEN*

A recent hoard containing at least 76 Athenian owls, both imitations and authentic types, and two silver “dumps” is catalogued and discussed. Dating from the late fourth century BC, the hoard shows remarkable affinity to the owl components of two other late-fourth century hoards, the 1989 Syria and 1973 Iraq hoards.

Presented here is a lot of 76 Athenian-type “owls” and two silver “dumps,” all part of a hoard that recently appeared on the market. The lot contained a mix of probable Athenian coins and Egyptian and Levantine owl imitations quite similar to the owl components of the 1973 Iraq (van Alfen 2000) and the 1989 Syria hoards (van Alfen 2002a); thus there is little reason to doubt that the coins compose (part of) one hoard, but whether this lot consists of the entire hoard is not known. Also not known is the find spot—it was rumored to have come from the western coast of the Arabian Peninsula—although the presence of Egyptian and Levantine owl imitations, the marks on the coins, and the silver dumps together give this hoard a distinctively Near Eastern, particularly Levantine, character. A *terminus post quem* closing date of c. 340 BC is provided by the presence of an Egyptian “Sabakes”-type imitation (no. 51, see below), while an *ante quem* date of c. 330 is suggested by the lack of other datable pieces, e.g., Alexander or Phoenician types. But again, without a complete record of the hoard we cannot know if such pieces were at one time part of it. The ANS purchased two of the imitations (nos. 59 and 71) as well as the

*The American Numismatic Society, 96 Fulton St., New York, NY 10038, USA (vanalfen@numismatics.org).

two silver dumps (nos. 77 and 78). Although I was not able to inspect physically the remaining coins, I was provided with digital photographs of the coins along with their weights and die axes.¹

GENERAL OBSERVATIONS

As noted, the composition of this hoard is roughly similar to the owl component of two other Near Eastern hoards, the 1989 Syria and the 1973 Iraq hoards. Of the 76 owls in the present hoard 48 (or 63%) are what I have termed “probable Attic” issues, meaning that they were likely minted in Athens. Because numerous mints in the ancient Near East produced imitations of Athenian coins, which many times are virtually indistinguishable from Athenian products save for a Semitic inscription or letter placed in an (in)conspicuous spot (see, for example, nos. 51–54), and because there is a strong likelihood that these same mints may have produced “anonymous” imitations with no such marks to give away their non-Athenian origins (e.g., nos. 55–56), and too because no complete study of later-fourth-century Athenian coinage has yet been completed, the best that we can say for these coins is that they were probably minted in Athens. Twenty-eight (or 37%) of the coins are listed as imitations, either because they are marked with Semitic letters or inscriptions, or because their style is clearly not Athenian. This 63–37% split is virtually identical to the 64–36% split between probable Attic issues and imitations in the 1989 Syria hoard which dates to the same period (of 142 owls in that hoard, 91 are “probable,” 51 are imitations; see van Alfen 2002a). The 1973 Iraq hoard, which is of slightly later date, c. 323 BC, exhibits an inverse split: of 164 owls in that hoard, 52 (or 39%) are probable Attic issues, while 112 (or 68%) are imitations (see van Alfen 2000). In that case, however, the abundance of imitative owls can be explained by the fact that the hoard contains a large number of imitations (a total of 60 coins, or 36% of the owl component) that were produced in or around Babylon where the hoard was found (van Alfen 2000).

From the Levant and Egypt there are a number of other hoards dating to the second half of the fourth century with large or exclusive owl components.² Because many of these hoards were not well-published, or even well-recorded,

1. I thank David Hendin for his help in procuring the photographs and additional information on the coins.

2. These are (from the Levant): *IGCH* 1505 (Phoenicia, 60+ Athenian types); *CH* 2.47 (The East, 25 Athenian types); *CH* 8.133 (Lebanon, 16 imitations); *CH* 8.152 (Eastern Turkey or Syria, 100+ imitations, many with Semitic letters on Athena's cheek); *CH* 9.369 (Ashkelon, 31 imitation obols); *CH* 9.441 (Nablus, 17 imitations); *CH* 9.456 (Near East, 36 probable Attic and imitations); (from Egypt): *CH* 8.125 (Egypt before 1951, 201 Athenian types); Nahman's hoard (9+ probable Attic and imitations; see van Alfen 2002b); Endicott's hoard (15+ probable Attic; see van Alfen 2002b); *IGCH* 1662 (Semenood, 60 Sabakes-type imita-



FIGURE 1



FIGURE 2

we cannot be certain of their exact composition, or of the ratio of probable Attic to non-Attic imitations. It is, however, interesting to note that while a number of these hoards appear to have contained a mix of bona fide Athenian issues and imitations, five of the hoards (*CH* 8.133, *CH* 8.152, *CH* 9.369, *CH* 9.441, *IGCH* 1662) might have been composed exclusively of imitations. But without a more secure basis for our statistics (e.g., fully recorded and published hoards), it is difficult to know just how significant these observations on probable Attic/imitation ratios might be. What the evidence (such as it is) may indicate, however, is that many areas of the ancient Near East in the late fourth century were generally well supplied with both real Athenian coins and their imitations in proportions that might have slightly favored real Attic issues. We might also expect to see hoards with a greater percentage of imitations coming from some local areas of Egypt, the Levant, and Babylonia where the imitations were intensively produced, as seems to be the case with the 1973 Iraq hoard, and perhaps the five hoards just mentioned.

As the real Athenian coins and their imitations circulated together, many of both sets were validated in various fashions, whether by chisel/knife cuts, countermarks, or punches. As can be seen in Table 1, the total number of coins so marked in this hoard is 50 (or 66%); this proportion is virtually identical to the total number of validated owls (probable and imitative) in the 1973 Iraq hoard (65%) and the 1989 Syria hoard (67%). Significantly, the proportions of how many probable and imitative coins were validated and in what fashion are quite similar too between this hoard and the 1989 Syria (compare Table 1 and van Alfen 2002a: Table 1; also see van Alfen 2000: Table 2).

Six coins (nos. 8, 14, 34, 37, 51, and 74) bear the so-called quatrefoil countermark (Fig. 1), a countermark found extensively on coins circulating in Egypt in the late fourth century, which might have been used by the Persian administration there (van Alfen 2002b: 67–69); these six coins, which include the Egyptian-made "Sabakes"-type almost certainly passed through Egypt at some point in their circulating life. The second most frequent countermark (Fig. 2), which appears on two coins (nos. 8 and 41), is similar to a countermark also appearing on coins found in Egypt (van Alfen 2002b: Figure 1, no. 45, and p. 63, Endicott's

tions); *IGCH* 1663 (Tell el Athrib, 700+ AR, including 109 probable Attic issues and 130 imitations; the hoard also included a reverse Athenian-type punch die); also from Egypt and likely dating to the later fourth century are: *IGCH* 1659 (Egypt, 52 probable Attic and imitations, including five plated coins); *IGCH* 1660 (Memphis, 39 fifth- and fourth-century Athenian types); *IGCH* 1661 (Naucratis, 12 Athenian types).

hoard no. 12; p. 65, miscellaneous no. 3). Three other different countermarks appear on nos. 1 (obv.), 10 (obv.), and 15 (obv.), but cannot be seen well enough in the photographs to determine their design and so are not illustrated.

Table 1: Chisel Cuts and Countermarks

Entire Hoard (76 coins)

Proportion of Total with cuts and/or countermarks: 66%

Proportion of Total with countermark(s) only: 12%

Proportion of Total with cut(s) only: 54%

Probable Attic Issues Only (48 coins)

Proportion of Total with cuts and/or countermarks: 71%

Proportion of Total with countermark(s) only: 14%

on obverse and reverse: 4%

on obverse only: 6%

on reverse only: 4%

Proportion of Total with countermark on obv. and cut on rev.: 4%

Proportion of Total with single cut only: 21%

on obverse only: 1%

on reverse only: 20%

Proportion of Total with multiple cuts only: 27%

on obverse and reverse: 7%

on obverse only: 0%

on reverse only: 20%

Proportion of Total with single cut on obv. and rev.: 2%

Proportion of Total with multiple cuts on obv. and rev.: 4%

Imitations (28 coins)

Proportion of Total with cuts and/or countermarks: 50%

Proportion of Total with countermark(s) only: 3%

on obverse and reverse: 3%

on obverse only: 0%

on reverse only: 0%

Proportion of Total with countermark on obv. and cut on rev.: 0%

Proportion of Total with single cut only: 25%

on obverse only: 0%

on reverse only: 25%

Proportion of Total with multiple cuts only: 19%

on obverse only: 3%

on reverse only: 7%

Proportion of Total with single cut on obv. and rev.: 3%

Proportion of Total with multiple cuts on obv. and rev.: 7%

Table 2. Tetradrachm weights
Probable Attic Issues

A. Frontal-eye Style (6 coins)

Highest-lowest weights: 17.01–15.10 g

Average weight: 16.44 g

Median weight: 16.05 g

B. Pi-Style (42 coins)

Below 16.00	*****	5
16.25–16.29	*	1
16.30–16.34	**	2
16.35–16.39	**	2
16.40–16.54	*	1
16.55–16.59	****	4
16.60–16.64		0
16.65–16.69	*	1
16.70–16.74		0
16.75–16.79		0
16.80–16.84	*	1
16.85–16.89	*	1
16.90–16.94	*	1
16.95–16.99	*****	5
17.00–17.04	****	4
17.05–17.09	*****	8
17.10–17.14	****	4
above 17.15	*	1

Imitations

A. Style Group I (2 coins)

Highest-lowest weights: 17.09–16.91 g

Average weight: 17.00 g

Median weight: 17.00 g

B. Style Group Ia (2 coins)

Highest-lowest weights: 16.63–16.21 g

Average weight: 16.42 g

Median weight: 16.42 g

C. Style Group II (2 coins)

Highest-lowest weights: 16.70–15.89 g

Average weight: 16.29 g

Median weight: 16.29 g

D. Style Group III (7 coins)

Highest-lowest weights: 16.79–14.50 g

Average weight: 16.09 g

Median weight: 15.64 g

E. Miscellaneous Imitations (11 coins)

Highest-lowest weights: 17.26–14.99 g

Average weight: 16.30 g

Median weight: 16.12 g

THE CATALOGUE: PROBABLE ATTIC ISSUES

Like many later fourth century hoards with owls, this hoard contains an abundance of *pi*-style types, so called because the ornament on Athena's helmet up and behind the ear resembles the Greek letter *pi*. This series of owls was likely related to the mid-fourth-century financial reforms of the Athenian statesman Eubolos, who served 355–342 BC, who initiated new mining leases and activity at Attica's famed mines at Laurion, which in turn made new stocks of silver available for coining. Around the middle of the fourth-century, after a period of apparent inactivity, the Athenian mint began to produce *pi*-style tetradrachms in great volume (Kroll 1993: 8). These coins differed stylistically from their fifth- and early fourth-century predecessors in a number of ways, but most obviously in the helmet design and the shape of the eye (the *pi*-style types have a profile eye, the earlier types the Archaic frontal eye). In the Near East both types circulated together, both types also were imitated, and all four of these variations are found in this hoard, which is not uncommon. The probable Attic frontal eye types here mostly appear to be from the early fourth century (cf. Svoronos 1975: pl. 16); nos. 4–6 are quite worn and may in fact be earlier issues. J. Bingen (1973) offered a typology for the *pi*-style owls, but most of these types here are either too worn or have the characteristic ornament off-flan, making his typology useless in this case; thus, the probable Attic *pi*-style coins are arranged here by weight, which, as can be seen in Table 2, are generally close to the 17.2 g Attic tetradrachm standard. Wear or over-vigorous cleaning could account for the weight loss in many of the coins. The weights of the probable Attic frontal eye types are mostly lower, but again many of these coins are quite worn. With one exception (no. 71), all of the owls in this hoard, probable and imitative, have a 9:00 die axis, a characteristic of the Athenian mint, and one often copied by those mints producing imitations.

Frontal Eye Types

1. 17.01 g; 9:00, obv. 1 ctmk?
2. 16.78 g; 9:00 (no marks)
3. 16.76 g; 9:00; rev. 1 punch
4. 16.50 g; 9:00; rev. 2 cuts
5. 16.47 g; 9:00; rev. 2 cuts
6. 15.10 g; 9:00; rev. 2 cuts

Pi-Style Types

7. 17.57 g; 9:00 (no marks)
8. 17.12 g; 9:00; obv. ctmk 1; rev.: ctmk 1 (x 2)
9. 17.11 g; 9:00 (no marks)

10. 17.10 g; 9:00; obv. uncertain ctmk; rev. 2 cuts; oval flan
11. 17.10 g; 9:00; rev. 3 cuts
12. 17.09 g; 9:00 (no marks)
13. 17.09 g; 9:00; rev. 1 cut
14. 17.09 g; 9:00; rev. ctmk 1
15. 17.06 g; 9:00; obv. uncertain ctmk; rev. 1 cut
16. 17.06 g; 9:00; rev. 2 cuts
17. 17.06 g; 9:00; obv. 1 cut; rev. 2 cuts
18. 17.05 g; 9:00; obv. 1 cut
19. 17.05 g; 9:00; rev. 3 cuts
20. 17.03 g; 9:00; rev. 1 cut, 1 punch
21. 17.03 g; 9:00; rev. 1 cut
22. 17.02 g; 9:00; rev. 2 cuts
23. 17.01 g; 9:00; obv. 1 cut; rev. 1 cut
24. 16.99 g; 9:00; rev. 1 cut
25. 16.99 g; 9:00 (no marks)
26. 16.97 g; 9:00 (no marks)
27. 16.97 g; 9:00; obv. 1 punch
28. 16.95 g; 9:00; rev. 1 cut
29. 16.93 g; 9:00; rev.: graffiti?
30. 16.87 g; 9:00; rev. 2 cuts
31. 16.85 g; 9:00; rev. 1 cut
32. 16.81 g; 9:00 (no marks)
33. 16.68 g; 9:00 (no marks)
34. 16.59 g; 9:00; obv. ctmk1 (x 2); rev. ctmk 1
35. 16.58 g; 9:00; rev. 1 cut
36. 16.57 g; 9:00; rev. 1 cut
37. 16.56 g; ?; rev. ctmk 1; partially melted?
38. 16.47 g; 9:00 (no marks)
39. 16.38 g; 9:00; rev. 3 cuts
40. 16.35 g; 9:00; obv. 1 cut; rev. 3 cuts
41. 16.31 g; 9:00; obv. ctmk 2
42. 16.31 g; 9:00; obv. 1 punch?; rev.: partially melted?
43. 16.29 g; 9:00 (no marks)
44. 15.97 g; 9:00 (no marks)
45. 15.83 g; 9:00; rev. 1 cut
46. 15.80 g; 9:00; rev. 1 cut
47. 15.77 g; 9:00; rev. 1 punch
48. 15.38 g; 9:00; rev. 2 cuts

IMITATIONS

When imitations of Athenian coins appear in large Near Eastern hoards, they can generally be divided into a number of stylistic groups; die links are also often found within these groups (van Alfen 2000: 10–11). Such is the case here. This hoard contains four clear stylistic groups of imitations with two or more coins in each group; singletons of well-known types that have been found in large number in other hoards (e.g., no. 50, a “Buttrey” type, and no. 51, a “Sabakes” type) are also found here. Each of these groups and the singletons will be discussed individually below. First however, it should be noted that while with the probable Attic types a chronological progression from frontal to profile eye type (i.e., *pi*-type) coins is assured, with the imitations it is not. Profile and frontal type imitations might well have been produced concurrently in the Near East in the later fourth century; we have no way of knowing if all mints producing imitations kept up with the latest trends from Athens.

A) Buttrey Frontal Eye Types

49. 16.76 g; 9:00; rev. 1 cut

50. 16.98 g; 9:00 (no marks)

One of these two coins, no. 50, clearly belongs to a well-known type that was first identified by T.V. Buttrey (1980, 1984), and can be classified as a Buttrey/Flament type X (see Flament 2001 and van Alfen 2002a: 16–20, pl. 11); the other coin appears to be related to this anonymous Egyptian series (van Alfen 2002a: pl. 12) and may be a variant of a Buttrey/Flament type M.³ Since the 1980s the Buttrey/Flament types have been thought to be anonymous Egyptian imitations, but in a recent article Flament (2003) has cast doubt on this attribution, suggesting instead that Buttrey/Flament types M and B, at least, are actual Athenian products. Flament bases his premise on 1) the presence of two type M and two type B coins in the 1985 Naxos hoard from Sicily, which dates to the end of the fifth century (and thus up-dates the coins from c. 375 to c. 410), 2) the fact that examples of these types have also been found in Piraeus (the port of Athens), Egypt, and the Levant (i.e., within the orbit of “normal” Athenian tetradrachm circulation), 3) on various assumptions about the reason imitation Athenian types were produced (e.g., a reduction in the availability of the coins from Athens in the late fifth century; the need to pay mercenaries), and 4) on the metallurgical analysis of one coin that indicated high silver (97.6%) and lead (2.3%) content, which could be indicative of both Athenian manufacture and the use of Laurion silver.

3. While the helmet ornament is similar to type M coins, Athena's upper eyelid and hair is slightly different from most published examples. One critical piece of stylistic evidence—the owl's feet—is off-flan.

While the arguments have merit, they are far from conclusive, as Flament himself admits (p. 9). Given the degree of interconnectivity between many Mediterranean locales during the fifth–fourth centuries, it really should not be surprising that Egyptian-made Athenian imitations could turn up in Sicily or in Athens; there is really no need to look for a specific historical incident to account for the presence of the coins outside Egypt. Indeed, by the first quarter of the fourth century the Athenians themselves were worried enough about imitative types that they passed legislation to protect their marketplace from any and all imitations, including presumably types that were minted in Egypt (Stroud 1974; see also van Alfen 2005). The fact that five Athenian-type punch dies have been found in Egypt is additional proof that anonymous imitations were produced there (Vermeule 1954: nos. 1–5; Jonkess 1950). Furthermore, we should not assume that imitators would not produce coins with fine alloy, or that they would not have access to Laurion silver (cf. Xenophon *Poroi* 3.2).

If in fact no. 49 proves to be a Buttrey/Flament type M, its appearance and the appearance of no. 50 in this hoard, both showing far less wear than some of the other frontal eye types (nos. 4–6), might also be problematic for Flament's revised dating of the coins, since this hoard must date after 340 BC. With the exception of the 1985 Naxos hoard, this hoard, and perhaps the 1989 Syria hoard,⁴ no coins of the Buttrey/Flament types have been found in hoard contexts that can provide reasonably secure numismatically-based dating evidence. In sum, the issue of the authenticity of the Buttrey/Flament types must remain open for now, at least until, for example, the crucial Karanis/Fayum hoard of 347 of these coins, which served as the basis for Buttrey's initial arguments [As this volume goes to press, I have been informed that it is to be published by Carmen Arnold-Biucchi in *Revue numismatique*].

B) Miscellaneous Semitic Inscribed *Pi*-Style

51. 16.94 g; 9:00, rev.: Aramaic SWYK and symbol to r.; three Aramaic (?) letters in l. field; obv. 1 cut; rev. ctmk 1

No. 51 is from an equally well-known series of imitations produced in Egypt. Shortly after he assumed power in Memphis in c. 340 BC, the Persian satrap of Egypt, who is known to us as Sabakes, began to produce this series, which bear his name on the reverse in Aramaic in place of the usual Athenian ethnic. Three different types of these coins were produced within a fairly large mintage that likely continued from c. 340 until Sabakes met his fate at the battle of Issus in 332. This coin is a type III (for an overview of this series see van Alfen 2002a: 27–31), sharing the same obverse die (O11) with all other type III issues, but has an as yet unrecorded reverse die.

4. No. 111 from the 1989 Syria hoard (van Alfen 2002a) appears to be a worn and abused type M.

C) *Pi*-Style Groups*Style Group I*52. 17.12 g; 9:00; rev.: *mem* in l. field (no marks)53. 17.09 g; 9:00; rev.: *mem* in r. field (no marks)54. 16.91 g; 9:00; rev.: *mem* in r. field (no marks)*Style Group Ia*

55. 16.63 g; 9:00; rev. 1 cut

56. 16.21 g; 9:00

Stylistically the coins of group I are related (the obverses of nos. 52 and 53 may in fact be die-linked) and are close enough to real Attic *pi*-style coins that to the unobservant they would likely pass as such were it not for the small Semitic letters inscribed on their reverses. Babelon (1910: 668–69) long ago suggested that the solitary *mem* appearing on some Roman-period coins of Gaza might be an abbreviation for Marnas, the city's patron deity. Thence the attribution to Gaza of the much earlier Philisto-Arabian and Athenian imitation types sporting a solitary *mem*; for these earlier coins the attribution is perhaps confirmed by an imitative Athenian drachm bearing *mem* on the reverse, and *ayin* on the obverse (Gitler and Tal forthcoming: ch. 4). *Ayin* is understood to be an abbreviation for the toponym Gaza (spelled *ayin zayin he*; Gitler and Tal forthcoming: ch. 4). While toponyms and their abbreviations—as opposed to the personal names of rulers/officials and ethnics—do seem to occur more frequently on Athenian imitations than on other coin types from the Near East,⁵ the *mem*-Marnas connection may be stretching the evidence. Other solitary letters, such as *beth*, *zayin*, *gimmel*, and *iod*, also appear on Athenian imitations and are not easily explained by reference to a toponym, or even to personal names (Gitler and Tal forthcoming: ch. 4, and Table 4.7). It may simply be that such letters served as dates or as control marks whose meaning would only fully be known to the officials in charge of producing the coins. Such solitary letters appearing on Phoenician coins, for example, have long been understood to serve this function (Elayi and Elayi 1988). Further evidence to support this view is found in this hoard.

5. For example, there is a series of smaller denomination Athenian imitation types with the paleo-Hebrew (sometimes Aramaic) inscription *YHD*, which refers to the province of Judea (Meshorer 2001: 4–8); similarly there are various denominations, mostly tetradrachms and drachms, from Gaza, Ashdod, and possibly Ashkelon that bear the toponym either spelled-out entirely or abbreviated (Gitler and Tal forthcoming). In other parts of the Persian east, in Cilicia and Egypt, for example, the name of the satrap and not the toponym was more commonly found on the coins, as on no. 51 here.

To begin, on the reverse of nos. 53–54 the Athenian ethnic, ΑΘΕ, is bowed inward perhaps to accommodate the *mem* in r. field; comparison with other real Athenian issues and many imitations show that the ethnic more commonly follows a straight vertical line, top to bottom. The ethnic on no. 52 shows the same inward bowing, but no trace of a letter in r. field, only the *mem* in l. field. Also, the obverses of no. 54 and nos. 55–56 all appear to be die-linked, yet the reverses of nos. 55–56 carry no solitary letters, nor is it likely that a letter in r. field is off-flan since the ethnics on both nos. 55–56 are straight, not bowed, and so make it unlikely that there would be room for a letter in r. field. These five coins (nos. 52–56) are all closely related, yet show considerable variation in the treatment of the solitary letters or lack thereof. This variation suggests that the significance attached to the letters (or lack thereof) was relatively specialized or secondary, as would be expected if they represented variables in production, such as different bullion sources, different officials, dates, and so forth. Note also that a coin from the 1973 Iraq hoard (van Alfen 2000: no. 48) appears related to these five as well, having an obverse perhaps linked to nos. 52–53 here, but with no Semitic letters on the reverse.

Style Group II

57. 16.70 g; 9:00; rev. 2 cuts

58. 15.89 g; 9:00; rev. 1 cut

The obverses and reverses of these two coins appear to be, if not die-linked, then certainly the products of the same hands. While the style is reasonably close to that of Athens, the Α of the ethnic on the reverse is missing a portion of one leg, giving the character a form similar to a backwards "P".

Style Group III

59. ANS 2005.18.1; 16.79 g; 9:00

60. 16.67 g; 9:00; rev. 1 cut

61. 16.40 g; 9:00

62. 16.30 g; 9:00

63. 16.01 g; 9:00

64. 15.95 g; 9:00

65. 14.50 g; 9:00

The obverses of all these seven coins are likely die-linked, as are the reverses of nos. 59–62. Stylistically these coins are similar to a linked group from the 1989 Syria hoard (van Alfen 2002a: nos. 99–101), and perhaps (distantly) related to another die-linked group from the 1973 Iraq hoard (van Alfen 2000: nos. 108–110). The low weights of these coins suggest that the Athenian standard might not have been

the intended mark, but rather the Babylonian/Levantine shekel of c. 8.33 g, which would give a double shekel of c. 16.6 g, a figure closer to the average and median weights of this group (see Table 2) than the Athenian tetradrachm of c. 17.2 g.

D) Miscellaneous Imitations

The non-standard style of most of these eleven coins betrays their non-Athenian origins. No. 66 may belong to stylistic group III, but the cut on the obverse makes the attribution less secure. The one stand-out in this group is no. 71, with its left-facing owl. Rarely seen, two other left-facing owl imitations were found in the 1973 Iraq hoard (van Alfen 2000: nos. 116–117), neither of which has any close affinity to this coin.

- 66. 17.26 g; 9:00; obv. 2 cuts
- 67. 16.99 g; 9:00; rev. 1 cut
- 68. 16.84 g; 9:00; obv. 2 cuts; rev. 1 cut
- 69. 16.78 g; 9:00; rev. 2 cuts
- 70. 16.58 g; 9:00
- 71. ANS 2005.18.2; 16.08 g; 3:00, obv. Athena to l.
- 72. 15.88 g; 9:00; rev. 1 cut
- 73. 15.79 g; 9:00; obv. 1 cut; rev. 1 cut
- 74. 15.71 g; 9:00; obv. ctmk 1 (x 2); rev. ctmk 1
- 75. 15.46 g; 9:00; rev. 1 cut
- 76. 14.99 g; 9:00

E) Dumps

- 77. ANS 2005.18.4; 24.29 g
- 78. ANS 2005.18.3; 15.64 g

On one side ("A") of both dumps there is a slight convexity along with a barely discernable geometric patterning, which likely formed as the metal cooled. The other side ("B") of both is rougher and flatter. Both appear to have been formed by pouring molten metal onto a flat surface where they were left until cool. Neither of the two weights matches with any degree of accuracy any known standards, so it must be assumed that none was intended. This is no cause for surprise since most ingots and dumps found in Near Eastern hoards tend not to conform to weight standards, but rather seem to be randomly created (van Alfen 2005).

CONCLUSIONS

In most respects, as noted above under General Observations, this hoard confirms what we have come to expect from late fourth-century owl hoards from the Near East. Indeed, the degree of similarity between this and other hoards, especially the

larger 1973 Iraq and 1989 Syria hoards, is in itself quite significant, since it allows us to describe the patterns of circulation and use of owl-type coinage in the Near East with more confidence. In sum, this and other hoards indicate that for a period of time c. 340–330 BC, in and around the major cities of the Levant, there was no shortage of the newer *pi*-style Athenian types, which in this hoard and the 1989 Syria hoard appear to outnumber the imitations almost 3:2. The older style Athenian coins (e.g., nos. 1–6) were still around in smaller numbers, many showing heavy wear after decades of circulation. Despite the availability of actual Athenian coins,⁶ several political authorities, e.g., the Egyptian satrap and individual city-states, saw it to their advantage to produce imitations of the new *pi*-style coins. In addition to these officials it is quite likely that numerous lesser authority-type figures and private individuals saw it fit to produce imitations as well. Thus, while there are a number of distinctive styles and groupings of imitations (e.g., style groups nos. I–III) that likely correspond to important issues—whether “official” or not—manufactured near where the hoard(s) was found, there are in addition large numbers of anonymous owls (e.g., nos. 49–50, 66–76) that could each represent the financial needs and aspirations of numerous other (private) groups (farther away).

The picture that develops of the role of the Athenian owl in Near Eastern exchange in the late fourth century is therefore chaotic. The owl was clearly an important type, well regarded and well recognized, and therefore intensively imitated, but since beyond Athens there was little means of exercising direct control over the manufacture and circulation of owls, any authority or individual could have been inspired to copy the coin; the degree to which they would faithfully reproduce the weight standard and metal quality would be left to individual discretion. The Semitic letters and inscriptions that appear on some imitations, e.g., nos. 51–54, may have been intended, in part, by the imitators (in this case recognized political authorities) as a means of distinguishing their imitations from other imitations, and therefore allowed them to have some modicum of control over the circulation and recall of their coins.

Although we cannot be absolutely certain of the actual find spot of this hoard, it was not in Egypt, which again is significant because of the presence of the Egyptian Sabakes-type (no. 51). Other finds of the Sabakes-type outside of Egypt seem to be linked to Alexander the Great’s conquests, which effectively broke the coins

6. Here it should be noted that one of the reasons often given for the existence of imitative Athenian coins—reduction in the availability of the actual Athenian issues and high demand in the Levant and Egypt—does not seem to obtain here, albeit most such explanations focus on a presumed reduction of minting at Athens at the end of the fifth century, not the fourth. See, for example, Kraay (1976: 205) and Figueira (1998: 535).

free from their presumed restricted use in Egypt (van Alfen 2000, 2002). Because no examples of the Sabakes-type have yet been found outside of Egypt in contexts that can be linked unequivocally to peaceful exchange, this hoard may provide the first evidence of such use. But then again, the Sabakes coin may simply indicate that the closing date of this hoard came after Egypt fell to Alexander's forces in 332.

REFERENCES

- Babelon, M. 1910. *Traité des monnaies grecques et romaines II.2*. Paris.
- Bingen, J. 1973. Le trésor monétaire Thorikos 1969. *Thorikos* 6: 7–59.
- Buttrey, T.V. 1982. Pharaonic imitations of Athenian tetradrachms. In: T. Hackens and R. Weiller, eds., *Proceedings of the 9th International Congress of Numismatics, Berne, September 1979*, vol I, pp. 137–140. Louvain-la-Neuve and Luxembourg: Association Internationale des Numismates Professionnels.
- . 1984. Seldom what they seem: the case of the Athenian tetradrachm. In: W. Heckel and R. Sullivan, eds., *Ancient coins of the Graeco-Roman world: the Nickle numismatics papers*, pp. 292–294. Waterloo, Ont.: Wilfrid Laurier University Press for the Calgary Institute of for the Humanities.
- Elayi, J. and G. Elayi. 1988. Abbreviations and numbers on Phoenician pre-Alexandrine coinage: the Sidonian example. *Numismatica e antichità classiche* 17: 27–36.
- Figueira, T. 1998. *The power of money: coinage and politics in the Athenian Empire*. Philadelphia: University of Pennsylvania Press.
- Flament, C. 2001. À propos des styles d'imitations athéniennes définis par T.V. Buttrey. *Revue belge de numismatique* 147: 39–50.
- . 2003. Imitations athéniennes ou monnaies authentiques? Nouvelles considérations sue quelques chouettes athéniennes habituellement identifiées comme imitations. *Revue belge de numismatique* 149: 1–10.
- Gitler, H. and O. Tal. Forthcoming. *The coinage of Philistia of the fifth and fourth centuries BC: A study of the earliest coinage of Palestine*. *Nomismata* 7.
- Jongkees, J.H. 1950. Athenian coin dies from Egypt. *Numismatic Chronicle* 10: 298–301.
- Kraay, C. 1976. *Archaic and classical Greek coins*. Berkeley: University of California Press.
- Kroll, J. 1993. *The Greek coins. Athenian Agora* 26. Princeton: American School of Classical Studies in Athens.
- . 1997. The Piraeus 1902 hoard of plated drachms and tetradrachms (IGCH 64). In: *Charakter: aphieroma ste Manto Oikonomidou*. Athens.
- . 2001. A small bullion find from Egypt. *American Journal of Numismatics* 13: 1–20.

- Meshorer, Y. 2001. *A treasury of Jewish coins*. Nyack, N.Y./Jerusalem: Amphora Press/Yad Ben-Zvi Press.
- Stroud, R.S. 1974. An Athenian Law on Silver Coinage. *Hesperia* 43: 157–188.
- Svoronos, J. 1975. *Corpus of the ancient coins of Athens*. Chicago: Ares.
- Van Alfen, P.G. 2000. The "owls" from the 1973 Iraq hoard. *American Journal of Numismatics* 12: 9–58.
- . 2002a. The "owls" from the 1989 Syria hoard with a review of pre-Macedonian coinage in Egypt. *American Journal of Numismatics* 14: 1–58.
- . 2002b. Two unpublished hoards and other "owls" from Egypt. *American Journal of Numismatics Second series* 14: 59–71.
- . 2005. Herodotos' "Arayndic" silver and bullion use in Persian-period Egypt. *American Journal of Numismatics* 16/17: 7–46.
- Vermule, C.C. 1954. *Some notes on ancient dies and coining methods*. London: Spink.
- Zournatzi, A. 2000. The processing of gold and silver tax in the Achaemenid Empire: Herodotus 3.96.2 and the archaeological realities. *Studica Iranica* 29: 241–271.

Twenty-Two Alexanders in Ann Arbor

PLATES 13–16

PAOLO VISONÀ*

A group of twenty-one Alexander tetradrachms donated in 1909 to the University of Michigan by G. Dattari includes nineteen issues of Macedonia, Side (?), Tarsus, Myriandrus, Aradus, Babylon, Memphis, and Salamis, dated between c. 333–317 BC. Dattari's coins are in the collection of the Kelsey Museum of Archaeology in Ann Arbor. Their Egyptian provenance, and the fact that these issues are known to have been among the contents of the great Demanhur hoard of 1905, raise the possibility that they came from that assemblage. Dattari himself was one of E. T. Newell's principal sources of information on the Demanhur hoard. Two other tetradrachms in Dattari's gift consist of an issue of Ake minted in 317/16 BC and an issue of an uncertain mint in Greece or Macedonia struck under Philip III, which cannot be linked to Demanhur. The Kelsey Museum's collection also contains an Alexander tetradrachm of Ake minted possibly in 310/09 BC.

A century since it was discovered, and a full quarter of a century since new data about its contents were last made available, the great Demanhur hoard (*IGCH* 1664) remains of paramount importance for the study of the tetradrachm coinage of Alexander the Great and his successors (Zervos 1980; *CH* 7.49; cf. Le Rider 2003: 198–201). Some additional information on the composition of this find may now come from archival research on the origins of the coin collection of the University of Michigan's Kelsey Museum of Archaeology, in Ann Arbor.

* Department of Art and Art History, 318 UCB, University of Colorado at Boulder, Boulder, CO 80309-0318.

On 30 July 1909, Professor Francis W. Kelsey of the University of Michigan “received from Mr. Charles L. Freer, who was then in Cairo, the following cablegram: ‘Will University accept as gift from gentleman here four thousand Roman and Alexandrian Coins?’ After consultation with President Angell,” wrote Kelsey on 30 March 1910, in his draft of a report to the Board of Regents of the University of Michigan, “we sent the following reply, signed by us both: ‘Yes, most gratefully.’” (Kelsey 1911).

Thus began, in Kelsey’s own words, the story of one of the most significant numismatic acquisitions by an American university in the early twentieth century. The “gentleman” who made it possible was Giannino Dattari, a prominent numismatist and collector of Egyptian antiquities,¹ who, on 24 October 1909, had written to James B. Angell, president of the University of Michigan:

Sir:

I have the honour to inform you that I have forwarded to your address eight parcels, six of which contain coins, and two contain books.

I am sorry that I could not send you a complete set of books containing my different works; but several of them are out of print. Still I hope some day to be able to find copies and I will be very happy to send them to your University.

As regards the coins I could have sent a much larger quantity; but I preferred to send you coins of good preservation and fit for study instead of sending a larger quantity, but of very little use.

In one of the parcels you will find the different inventories of the coins I have sent, and you will kindly notice, that in the Alexandrian series, each coin bears my catalogue number. Will you allow me to suggest, that you arrange these coins for the present keeping the numbers that they bear? As I hope in future to send you some more, and then you will find it easier to fill up the vacancies. When your collection will have reached a respectable number and when there is little hope of new entries, then you may give any other numeration that you may prefer. This is my humble opinion; but of course you may do as you wish.

Of the Roman coins, which number over 2200 pieces, I have little hope of being able to send you many more, for the reason that I have not kept a record of the coins I have sent to you; but the work of that catalogue was rather laborious and I had not time to make another copy.

I must apologize for the clerical errors that you may discover in the inventories; but I hope there will not be too many.

I finish by wishing that the few coins I have sent to your University may form the foundation of a collection which will not have an equal in the U.S.A.

1. Dattari “virtually monopolized the trade of coins, including hoards, in Egypt from 1891 to his death in 1923” (Christiansen 1988: 30).

As Kelsey later noted in his draft, "the collection received by the University exceeds in number the total given in the written inventory which was sent with it." The "few coins" shipped by Dattari in 1909 turned out to be 3,279 silver, billon, and bronze specimens ranging in date "from just before the founding of Alexandria to the middle of the fourth century A.D.," including twenty-one Alexander tetradrachms.² Why would Dattari present an American university with such a generous gift? Kelsey himself did not provide many details, but merely stated in his report that Dattari had initially offered the collection to Freer, "desiring that it become useful as part of an art collection," whereupon Freer, "whose collections have been developed along other lines, arranged to have it presented to the University of Michigan" (Kelsey 1911: 196). However, a typewritten copy of a letter by Dattari from Cairo, dated 13 December 1914 and presumably addressed to Kelsey, reveals that Dattari later tried to sell his entire coin collection to a foreign institution (the University of Michigan?). Thus, his gift may also have been intended to generate interest for a future coin sale—which became a matter of urgency after World War I broke out:³

Dear Sir:

Your favour to hand. Herewith enclosed you will please find

1st. A kind of catalogue of the Ptolemanque [*sic*] coins.

2nd. A list of all the other coins forming all the collections I possess.

The numbers are approximate, as to count them properly would take such a time as to delay too much this letter.

You must allow me to say that it will be rather difficult to combine a sale unless either the purchaser will see the coins or at least have a proper catalogue so as to be able to determine the value of the collections.

To see and examine the coins of course it would be the best and surest way to come to some conclusion. But, to arrive at that result I would have to bring the coins to America myself! But what would be if after such a journey

2. Listed as two coins of Philip II, nineteen of Alexander (Kelsey 1911: 196). Archive notes of Orma Fitch Butler say: "This collection, the largest of all gifts of coins to the University, was presented by Mr. C Dattari [*sic*] of Cairo, through the good offices of the late Charles L. Freer, A.M. hom, 1904. The letter of Dr. James B Angell, president emeritus, transmitting the gift and its acceptance by the Regents will be found in the Proceedings of the Board of Regents for Dec. 1909, pages 597-598" (e-mail communication by R. Meador-Woodruff on 21 January 2000). An abbreviated version of Kelsey's report is found in Markham (1950: 168).

3. Kelsey's draft contains this paragraph, which was omitted from the published report: "The statement of Mr. Dattari that he took pains to send good specimens is borne out by an inspection of the coins, which in point of preservation maintain an average of unusual excellence and bear witness to a careful selection from a much larger number. The collection as a whole illustrates the history of a coinage of great variety and unique interest during a period of nearly seven centuries. It is a very valuable addition to the working equipment of the University."

with a burden of about *one ton* of metal the sale would not be effected? It would be impossible to bring the coins back to Egypt as there would be to pay the customs duties at 8% *ad valorem*!!! If I would be sure of the sale I would not hesitate one moment to make the journey and pay the outgoing duty of 2% *ad valorem* to the Egyptian department of antiquities, and pay the insurance for the journey. Expenses rather heavy for me to undergo without the certainty of recovering that amount.

Therefore under such circumstances I think the best way would be to send you detailed catalogues (A matter of great work, although it is partially done).

As regard the price I may tell you that before the war commenced between Austria and Servia [*sic*], I was arranging the sale of the Alexandria and the reform coins. (The Byzantine excepted) but not my Alexanders nor the duplicates. The purchaser was Count Von Bankhoften, the one who gave his Roman collection to the Vienna Museum and for that act of magnanimity the Emperor made him *Count*. Unfortunately I did not arrange direct with him but with the vice president of the Vienna Numismatique Society. Person known as a very interested man to make money, and he was trying very probably to attain some profit for himself, therefore the correspondence dragged and we had not time to finish the arrangements.

The price was fixed to £20,000 but he wanted me to ask £25,000 and the difference of £5,000 for himself and others. Of course I did not agree as I did not find it a correct thing to do.

Now although the number of coins is far larger than what it was in the Vienna sale, I am ready to cede everything for £20,000. In such a way I am losing about £10,000 as the collections cost me £29,075.

To give you an idea of the cost of the coins in this very moment I am arranging the purchase of about 200 coins of the nomes. In that lot there are only 9 coins I do not need; but the seller (Mr. Mahman perhaps you know him) does not want to sell the 9 coins for £100 that I offered to him, he pretends £250 for the 200 coins. Nobody can believe and imagine what cost a collection when the same has reached a respectable number of coins. My experience has been, that up to the number of 3,000 coins, things are going easy and with a little luck such a collection may be cheap at the end, but every 100 coins added to the 3,000, the price of each coin increases so much, that it really needed my strong will to continue collecting and very often I had to make great sacrifices in order not to lose the chance.

Thank God now we are just in a moment of calm and therefore we do not see much as with the war nobody has any money to spare.

Hoping to hear soon from you, thanking you very much for the great trouble you are taking on my behalf, I wish you a Merry Xmas and a Happy New Year.

According to a list attached to this document, the number of coins that Dattari wished to sell was “about” 35,369, including 164 “silver tetra-drammes of Alexander” together with “a small number of drams and copper coins”. It is not known what happened to his collection, since the sale did not go through. Except for 1,770 specimens from the imperial mint of Alexandria donated to Rome’s Museo Nazionale Romano in 1921 (Cesano 1925: 179; Panvini Rosati 1984: 13), most of Dattari’s coins were dispersed after his death in 1923 (Christiansen 1988: 30).⁴

Since Dattari was not particularly interested in collecting Greek issues, the presence of twenty-one Alexander tetradrachms among the coins given in 1909 to the University of Michigan is especially noteworthy.⁵ Each of them is described below:⁶

1. Macedonia, c. 325–324 BC (Troxell 1997)
Obv.: Beardless head of Herakles r. Border of dots.
Rev.: ΑΛΕΞΑΝΔΡΟΥ; Zeus seated on throne l. holding eagle on outstretched r. hand and scepter in l. On l., cock (see Price 1991: 552).
Ref.: Price no. 79; Troxell 1997: 22, 90–91 (Group E, issue E3).
 Plate 13 no. 1. K 81350. Ø 28 mm, 16.321 g, 180°, worn.
2. Macedonia, c. 325–324 BC (Troxell 1997)
Obv.: Similar to the preceding.
Rev.: Similar to the preceding. On l., bucranium (see Price 1991: 553).
Ref.: Price no. 93; Troxell 1997: 22, 90–91 (Group E, issue E8).
 Plate 13 no. 2. K 81258. Ø 26 mm, 14.846 g, 0°.
3. Macedonia, c. 320–319 BC (Troxell 1997)
Obv.: Similar to the preceding.
Rev.: ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ; Similar to the preceding. On l., monogram (see Price 1991: 575).
Ref.: Price no. 120; Troxell 1997: 23 (Group I, issue I2).
 Plate 13 no. 3. K 81260. Ø 25 mm, 16.84 g, 150°.
4. Side (?), c. 323–317 BC
Obv.: Similar to the preceding.

4. For Dattari’s collection, see also the bibliography assembled by K. Emmett at <http://www.coinsfromanegypt.org/html/topics/bibliography.htm> (accessed 7 April 2005).

5. In addition to 164 Alexander tetradrachms, the summary list of c. 35,369 coins offered for sale by Dattari in his 13 December 1914 letter records (among the “Duplicates”) c. 1,000 “Ptoleimaques coins [*sic*]” and a “Collection of Polemaigne coins [*sic*]” containing c. 1,200 coins.

6. My list follows the geographical sequence adopted by M. J. Price in his catalogue of the British Museum’s collection (Price 1991). All datings of the tetradrachms nos. 4, 6, 11, 13–16, 20, and 21 are based on the chronology proposed, among others, by Troxell (1991: 58–61), Le Rider (1998b: 182–185), and Touratsoglou (2004: 181–182, 189). Abbreviations used: K = Kelsey Museum of Archaeology; Ø = module.

Rev.: In exergue: traces of ΒΑΣΙΛΕΩΣ. On r., ΑΛΕΞΑΝΔΡΟΥ. On l., wreath; below throne, ΔΙ (see Price 1991: 582).

Ref.: Price no. 2949.

Plate 14 no. 4. K 81272. Ø 25 mm, 16.048 g, 0°.

5. Tarsus, c. 333–c. 327 BC (Price 1991)

Obv.: Similar to the preceding. Test slashed.

Rev.: ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. Below throne, Β (see Price 1991: 579).

Ref.: Price no. 3000.

Plate 14 no. 5. K 81315. Ø 27 mm, 16.692 g, 270°.

6. Tarsus, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ On l., Nike flying l.; below throne, monogram (cf. Price 1991: 557, 574, but the main letter is seemingly not apicated here).

Ref.: Price no. 3038.

Plate 14 no. 6. K 81262. Ø 28 mm, 16.325 g, 60°. Edge flaked.

7. Damascus, c. 330–c. 320 BC (Price 1991)

Obv.: Similar to the preceding.

Rev.: ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., monogram and letter; above and below strut of throne, pellet; below throne, ΔΑ (see Price 1991: 577, 581).

Ref.: Price no. 3199.⁷

Plate 14 no. 7. K 81351. Ø 25 mm, 16.583 g, 0°.

8. Damascus, c. 330–c. 320 BC (Price 1991)

Obv.: Similar to the preceding.

Rev.: Traces of legend on r. Similar to the preceding. On l., forepart of ram r.; above and below strut of throne, pellet; below throne, pellet and traces of ΔΑ (see Price 1991: 563, 581).

Ref.: Price no. 3208.

Plate 14 no. 8. K 81316. Ø 26 mm, 16.913 g, 0°.

9. Damascus, c. 330–c. 320 BC (Price 1991)

Obv.: Similar to the preceding.

Rev.: Similar to the preceding. Above strut of throne, 4 pellets; below throne, ΔΑ (see Price 1991: 581).

7. Price's description of the symbols below the throne ("above strut, 2 globules; below, ΔΑ") is based on Newell (1911: 41 no. 168), and should be revised in light of the evidence of this coin.

Ref.: Price no. 3210.

Plate 14 no. 9. K 81317. Ø 28 mm, 16.922 g, 345°.

10. Myriandrus, c. 325–c. 323 BC (Price 1991)

Obv.: Similar to the preceding.

Rev.: Similar to the preceding. On l., ankh; below throne, monogram (see Price 1991: 551, 603; for the symbol, cf. Hersh 1998: 143).

Ref.: Price no. 3223.

Plate 14 no. 10. K 81353. Ø 26 mm, 16.227 g, 330°.

11. Myriandrus, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., monogram; below throne, monogram (see Price 1991: 579, 603).

Ref.: Price no. 3228.

Plate 15 no. 11. K 81331. Ø 26 mm, 16.742 g, 0°.

12. Ake, 317/16 BC (Price 1991)

Obv.: Similar to the preceding.

Rev.: ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., Phoenician letters (see Price 1991: 630) and traces of the numeral 30.

Ref.: Price no. 3279.

Plate 15 no. 12. K 81285. Ø 26 mm, 16.341 g, 180°.

13. Aradus, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ;⁸ Similar to the preceding. Below throne, monogram (see Price 1991: 576).

Ref.: Price no. 3309.

Plate 15 no. 13. K 81318. Ø 26 mm, 16.779 g, 60°.

14. Aradus, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: Similar to the preceding. On l., ΣΩ in ligature; below throne, monogram (see Price 1991: 576, 625).

Ref.: Price no. 3321.

Plate 15 no. 14. K 81328. Ø 27 mm, 16.521 g, 210°.

15. Babylon, c. 323–317 BC

Obv.: Similar to the preceding. Worn and damaged surface.

Rev.: [B]ΑΣΙΛΕΩΣ[Σ] ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., sickle (?) and M; below throne, monogram (see Price 1991: 599, 628).

8. The form of the letter N is irregular.

Ref.: Price no. 3676.

Plate 15 no. 15. K 81279. Ø 26 mm, 16.616 g, 285°.

16. Babylon, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: Similar to the preceding. On l., M; above strut of throne, ΛΥ (see Price 1991: 599).

Ref.: Price no. 3692.

Plate 15 no. 16. K 81313. Ø 27 mm, 16.783 g, 90°.

17. Memphis, c. 325–323 BC (Le Rider 1998a: 55)

Obv.: Similar to the preceding. Worn and damaged surface.

Rev.: ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., ram's head with Isis-crown; below throne, monogram (see Price 1991: 564, 581).

Ref.: Price no. 3964.

Plate 15 no. 17. K 81345. Ø 29 mm, 15.765 g, 0°.

18. Memphis, c. 325–323 BC (Le Rider 1998a: 55)

Obv.: Similar to the preceding.

Rev.: Similar to the preceding. On l, rose; below throne, traces of letters ΔΙΟ (see Price 1991: 564, 582).

Ref.: Price no. 3971.

Plate 16 no. 18. K 81352. Ø 25 mm, 17.029 g, 0°.

19. Memphis, c. 323–c. 316 BC (Price 1991)

Obv.: Similar to the preceding. Worn surface.

Rev.: Similar to the preceding. On l., thunderbolt; below throne, ΔΙ (see Price 1991: 567, 582).

Ref.: Price no. 3976.

Plate 16 no. 19. K 81259. Ø 29 mm, 16.278 g, 0°.

20. Uncertain mint in Greece or Macedonia, c. 323–317 BC

Obv.: Similar to the preceding. Edge flaked.

Rev.: [ΒΑΣΙΛΕΩΣ] ΦΙΛΙΠΠΟΥ Similar to the preceding. On l., M; above strut of throne, monogram (see Price 1991: 576, 599). Hairline crack.

Ref.: Price 1991, 167, no. P7.

Plate 16 no. 20. K 81256. Ø 28 mm, 14.693 g, 0°.

21. Salamis, c. 323–317 BC

Obv.: Similar to the preceding.

Rev.: ΒΑΣΙΛΕΩΣ ΦΙΛΙΠΠΟΥ Similar to the preceding. On l., rudder (see Price 1991: 564).

Ref.: Price 1991: 393, no. P129b.

Plate 16 no. 21. K 81257. Ø 25 mm, 16.31 g, 30°.

The Egyptian provenance of this group of tetradrachms, the timing of their acquisition, and the reputation of the donor are remarkable in view of the 1905 discovery of the Demanhur hoard (Price 1991: 41–42, 52, 82–83, and *passim*). It was Dattari who provided E. T. Newell with critical information about this hoard in 1911 (Newell 1911–12: 194–195, 111; 1923: 10–11, 145, 147, 158 n.2). Although it is now believed that the hoard consisted of 8,000 or more tetradrachms (Zervos 1980: 185),⁹ Dattari claimed that the original deposit contained “anywhere from ten to twenty thousand tetradrachms” and “was divided into five parts of several thousand coins each,” of which “one part was sent to Alexandria and the rest to Cairo for disposal”. Newell initially agreed with this estimate, and established that the hoard was buried c. 318–317 BC (Newell 1911–12: 194–195; 1923: 11, 152–153).¹⁰ Given this background, the possibility that most if not all of the specimens now in Ann Arbor may have belonged to the Demanhur hoard is not too farfetched: *se non è vero, è ben trovato*. Yet despite Dattari’s firsthand knowledge of its contents, knowledge that is apparent from the data quoted by Newell, there is no evidence that he had obtained some of the Demanhur coins for his collection. Moreover, Dattari never told Newell of his gift of tetradrachms to the University of Michigan. Thus, the existence of these coins remained unknown to Newell and subsequent scholars of Alexander’s coinage.

Except for the rare tetradrachm of Philip III of uncertain mintage (no. 20), of which no examples are known from Demanhur, and the specimen of Ake dated to the year 30 (no. 12), which is admittedly too late to have belonged to this assemblage,¹¹ every other issue represented in Dattari’s gift has been recorded among the Demanhur coins. Their generally good condition also recalls that of the Demanhur coins seen by Newell. A reexamination of the extant portions of the hoard in London, New York, and Toronto, and a comparison of the coins’ patinas, could help shed light on the origin of Dattari’s tetradrachms.

Among the holdings of the Kelsey Museum of Archaeology is another tetradrachm of Ake bearing the following types:

22x. Ake, 310/9 BC?

Obv.: Beardless head of Herakles r. Border of dots.

Rev.: ΑΛΕΞΑΝΔΡΟΥ Similar to the preceding. On l., Phoenician letters and traces of the numeral 37(?).

9. According to Price (1991: 52), “the publication of this great find of some 8,000 tetradrachms was a turning point in Alexander numismatics.” See also Troxell (1997: 75).

10. For the burial date, cf. Bellinger (1963: 88), who sets it at 318/17 BC; Zervos (1980: 187), who sets it at about 318 BC; Price (1991: 52), who sets it at 318 or 317 BC; and Le Rider (2003: 198), who sets it at 318 or the beginning of 317 BC.

11. The obverse die seems very close to Newell (1916: 48 no. 33, pl. VIII nos. 3–4). Cf. Newell (1923: 135) and Price (1991: 407), who writes, “In the Demanhur hoard the last issue of Ake is 29.”

Ref.: Price no. 3293.

Plate 16 no. 22x. K 84968. Ø 27.7 mm, 16.758 g, 30°.

This specimen was purchased at Jaffa in 1890 by Henry Gillman, then US Consul in Jerusalem, and was donated to the Kelsey Museum in 1952, along with most of Gillman's coin collection (Visonà 1998: 141–142). It seems appropriate to present it together with the museum's finest accession of Alexander coins.

ACKNOWLEDGMENTS

I am grateful to Ms. Robin Meador-Woodruff, registrar of the Kelsey Museum of Archaeology in Ann Arbor, for providing me with copies of F. W. Kelsey's notes and G. Dattari's letters to the University of Michigan, and for her friendly assistance with the preparation of this article. I also wish to thank the University of Michigan's Rackham Graduate School and Mr. Larry Goldstein in particular for bringing to my attention D. Markham's article. Permission to publish the Alexander tetradrachms donated by Dattari and H. Gillman has graciously been granted by Elaine K. Gazda and Sharon C. Herbert, former director and current director of the Kelsey Museum. The photos are by Fred Anderegg.

REFERENCES

- Bellinger, A. R. 1963. *Essays on the coinage of Alexander the Great*. ANS Numismatic Studies 11. New York: American Numismatic Society.
- Cesano, L. 1925. Il medagliere del Museo Nazionale Romano. *Atti e Memorie dell'Istituto Italiano di Numismatica* 5: 169–192.
- Christiansen, E. 1988. *The Roman coins of Alexandria*, vol. 1. Aarhus University Press.
- Hersh, C. A. 1998. Additions and corrections to Martin J. Price's "The Coinage in the Name of Alexander the Great and Philip Arrhidaeus." In: R. Ashton and S. Hurter, eds., *Studies in Greek numismatics in memory of Martin Jessop Price*, pp. 135–144. London: Spink.
- Kelsey, F. W. 1911. The sixteenth Michigan classical conference. *The School Review* 19(3): 197–201.
- Le Rider, G. 1998a. Why did Alexander not strike coins in Asia Minor before 325/4? In: A. Burnett, U. Wartenberg, and R. Witschonke, eds., *Coins of Macedonia and Rome: essays in honour of Charles Hersh*, pp. 55–57. London: Spink.
- . 1998b. Review of H. A. Troxell, *Studies in the Macedonian Coinage of Alexander the Great*. *Schweizerische Numismatische Rundschau* 77: 179–190.
- . 2003. *Alexandre le Grand. Monnaie, finances et politique*. Paris: Presses Universitaires de France.
- Markham, D. 1950. The University of Michigan coin collections. *The Michigan*

- Alumnus Quarterly Review* 56(14): 165–171.
- Newell, E. T. 1911–12. Reattribution of certain tetradrachms of Alexander the Great. *American Journal of Numismatics* 45: 1–10, 37–45, 113–125, 194–200; 46: 22–24, 37–49, 109–116.
- . 1916. *The dated Alexander coinage of Sidon and Ake*. Yale Oriental Series, Researches 2. New Haven: Yale University Press.
- . 1923. *Alexander hoards II. Demanhur, 1905*. ANS Numismatic Notes and Monographs 19. New York: American Numismatic Society.
- Panvini Rosati, F. 1984. Il gabinetto numismatico del Museo Nazionale Romano di Roma. *Bollettino di Numismatica* 1 ser. 2–3: 7–20.
- Price, M. J. 1991. *The coinage in the name of Alexander the Great and Philip Arrhidaeus. A British Museum catalogue*. Zurich and London: The Swiss Numismatic Society in association with British Museum Press.
- Touratsoglou, Y. 2004. Review of G. Le Rider, *Alexandre le Grand. Monnaie, finances et politique*. *Schweizerische Numismatische Rundschau* 83: 180–192.
- Troxell, H. A. 1991. Alexander's Earliest Macedonian Silver. In: W. E. Metcalf, ed., *Mnemata: papers in memory of Nancy M. Waggoner*, pp. 49–61. New York: American Numismatic Society.
- . 1997. *Studies in the Macedonian coinage of Alexander the Great*. ANS Numismatic Studies 21. New York: American Numismatic Society.
- Visonà, P. 1998. A hoard of fourth-century Athenian tetradrachms from Nablus. *Quaderni ticinesi di numismatica e antichità classiche* 27: 141–149.
- Zervos, O. 1980. Additions to the Demanhur hoard of Alexander tetradrachms. *Numismatic Chronicle* 7 ser. 20: 185–188.

Silver Coinage of the Bosporan King Spartocus: The Problem of Attribution

PLATES 17–18

ELENA STOLYARIK*

Two didrachms are known with an obverse portrait of Spartocus and a bowcase on the reverse. The date and attribution of this Bosporan issue entails definite difficulties. Spartocus silver coins should not be treated in isolation. Analysis of the reverse type shows a close association with the Panticapaeum silver and bronze issues of the Apollo/bowcase type. In addition, the image of the trident and two dolphins beneath the bowcase on the reverse demonstrates the intimate relationship with the posthumous Lysimachus coinage from Byzantium, which itself was imitated by the royal issues of the Bosporan kings during the second century BC. The new classification of the Lysimachus and Paerisades issues, and analysis of the silver and bronze issues from Panticapaeum, make it possible to attribute the Spartocus silver coins to a specific period of Bosporan history. They must have been minted by an otherwise unknown Spartocus VI, sometime around 140 BC.

One of the most mysterious coinages of the Bosporan kingdom is the silver issue in the name of Spartocus. Only two didrachms, struck on the Attic standard, survive. Their obverse bears a portrait of Spartocus facing right; the reverse has a bow-in-case struck in unusually high relief, plus a trident with dolphins. The inscription reads ΒΑΣΙΛΕΩΣ ΣΠΑΡΤΟΚΟΥ; the coin also bears a magistrate's monogram, ΠΑ (*pi alpha*).

The coins' specific find spots are unknown, but both seem to have come from the general area of the ancient Bosporan kingdom. One example, now in the

* The American Numismatic Society, 96 Fulton Street, New York, NY 10038, USA (elena@numismatics.org).

collection of the State Historical Museum in Moscow (Plate 17 no. 1), was bought in the nineteenth century in the Crimea (Köhler 1824; 1850: 137–161; Golenko 1982: 50–55). The second specimen known was purchased by the American Numismatic Society in 1954 (Plate 17 no. 2 = ANS 1954.67.1). The Moscow coin, at 7.77 g, is too corroded to determine a proper weight, while the American Numismatic Society specimen weighs 8.32 g.

We know from hoards and single finds in the Black Sea area that in the third and second centuries BC the “lysimachi”—coins struck posthumously in the name of Lysimachus of Thrace (323–281 BC)—became the major gold currency of the region. Local mints, such as Tomi, Istria, Callatis, Chersonesus, and Panticapaeum issued their own gold coinage modeled after the lysimachi from Byzantium (Plate 17 nos. 3–8). Based on this close similarity, Constantine Marinescu posited the existence of the so-called Bosphorus Workshop, probably situated at Byzantium. This workshop would seem to have cooperated with other cities by sending out engravers, responsible for striking coins in the distant coastal cities of the Propontic and Pontic areas (Marinescu 2001: 127–138).

Most of these gold lysimachi are distinguished by special monograms, which also occur on their silver tetradrachm counterparts. Hoard evidence allows a chronological classification of these issues, of which the most recent and most thorough is that by Marinescu (1996). Parallels among the lysimachi allow us to date the coinage of the Bosphoran dynasty.

The Spartocus didrachm bears a trident with dolphins. According to Marinescu, this symbol only appeared on the gold and silver coins of Byzantium after 195 BC (Marinescu 1996: 37). Vladlen Anokhin claimed that the silver didrachm belonged to the reign of Spartocus V, known from epigraphic evidence (*CIRB* 26, 75; *SEG* 439). But given Marinescu’s new date, this attribution seems incorrect: according to Anokhin, the reign of Spartocus V was around 205–195 BC (Anokhin 1999: 93). A solution to this apparent inconsistency would be to adopt the hypothesis of several Russian scholars (Keler 1850: 158; Shelov 1956: 187; Golenko 1982: 51; Vinogradov 1987: 66) in positing the existence of another Spartocus, a Spartocus VI, who could then have been the issuer of the didrachms. The question remains as to where the reign of Spartocus VI falls among those of the second-century Bosphoran rulers; since the Bosphoran kings used the title βασιλεύς, they ruled only successively, not simultaneously, in their domain.

Whereas the trident with dolphins supplies a *terminus post quem* for the Spartocus didrachm of 195 BC, the date can be narrowed further through iconographic and metrological studies. The style of the obverse is closest to that of the Paerisades stater from the Artjukhov kurgan (Maksimova 1979) (Plate 18 no. 9). Both of these images portray individualistic portraits executed with great care in the modeling of the facial features and hair, reminiscent of the earlier “fine style” Lysimachus

coinage depicting the deified Alexander. Not only do the obverses resemble each other stylistically, but the coins share the same magistrate's monogram, namely *pi-alpha*. Our previous study attributed the Paerisades stater to the reign of Paerisades IV, dating c. 170/160 to 145/140 BC (Stolyarik 2000: 379).

Although on the Spartocus didrachms the obverse image of the king and the trident with dolphins on the reverse are modeled after the gold lysimachi, the reverse type shows a bow in its case. This image derives from another important coinage of the period—namely, the civic silver and bronze issues of the chief city of the Bosporan kingdom, Panticapaeum (Shelov 1956: pl. VII, 86–88; pl. VIII, 95; Zograph 1951: pl. XLII, 8; Burachkov 1884: pl. XXI, 106–114). Dating the Panticapaeum coinage will permit further narrowing the date of the Spartocus pieces. Shelov dated the Apollo / bowcase silver issues of Panticapaeum to the first half of the second century BC (Shelov 1956: 162). Golenko, however, believed that this series started around 150 BC and lasted well into the second half of second century (Golenko 1965: 60–61). His research was based on examination of Apollo / bowcase drachms that were overstruck on drachms of Amisus in Pontus (Golenko 1968: 37–40). The fact that the Amisus silver, which arrived in the Bosporan region in the second half of the second century BC in rather considerable quantity, was converted by overstriking into the coins of Panticapaeum, apparently speaks in favor of Golenko's hypothesis.

Dmitrii Shelov, who went through a number of the largest coin collections and publications, established the existence of different monograms, abbreviations, and symbols on the drachms of Apollo / bowcase type (Shelov 1956: 160). According to his study, this Panticapaeum civic silver coinage could be divided into three general groups. The first group (Plate 18 no. 10) bears no magistrate monogram (Giel 1896: pl. XIX, 51; Shelov 1956: pl. VII, 86); the second (Plate 18 no. 11) does have one (Giel 1896: pl. XIX, 52; Giel 1891: pl. V, 37–44; Bertier de la Garde: 1923, pl. L, 1657; *SNG Stancomb* 2000: no. 583; Anokhin 1986: pl. 6, 179–186). The first two groups are struck in good silver, containing not more than 1.5% to 2% of copper (Smekalova 2000: 274), on the Attic standard. The third and last group (Plate 18 nos. 12–14) is struck in somewhat debased silver containing around 4% to 10% copper (Smekalova 2000: 274) and shows great variation in weight, which is consistently below the Attic standard (Bertier de la Garde 1923: nos. 1655, 1656; Anokhin 1986: pl. 6, 189, pl. 7, 189a–b; *SNG BM* 1993: 928, 929; *SNG Stancomb* 2000: no. 584).

The Spartocus silver didrachm was struck in 98% fine silver on the Attic standard and bears a magistrate's monogram. It thus corresponds to the second group of the Panticapaeum civic coinage—stylistically, it corresponds most closely to the issue with the magistrate's monogram KT (*kappa tau*) (Giel 1896: pl. XIX, 52; Bertier de la Garde: 1923: pl. L, 1657; *SNG Stancomb* 2000: no. 583; Anokhin 1986:

186e). Shelov regarded this as the latest issue of Panticapaeon civic silver in the second group (Shelov 1956: 160).

Moreover, the degradation in style and the reduction in weight of the final group of silver coinage from Panticapaeum correspond to a similar degradation in style and reduction in weight found in the Bosphoran royal staters (Plate 18 nos. 15–17), which must be attributed to the reign of the final ruler, Paerisades V (140/130–111/108 BC) (Stolyarik 2000: 383 nos. 9–13). The drachms of the first two series of the Panticapaeon silver therefore must have been minted before this last reign.

The first two series of Panticapaeon silver drachms can be dated further by the Kerch hoard. Unfortunately, this hoard was mixed with some bronzes of Panticapaeum, but the silver part of the find probably had not been changed by the time Christian Giel bought it for his collection (Giel 1891: nos. 37–48; Giel 1895: 51–52). Ten drachms of the first and second series of the Apollo/bowcase type were found together with two rare silver obols of the Apollo/dolphin type with a circle of dots (Plate 18 no. 18) (Giel 1891: no. 45). Constantine Golenko related the obols from the Kerch hoard to a unique silver trihemiobol with the types of Athena's head and an ear of grain and a circle of dots (Plate 18 no. 19) and dated them to the third quarter of the second century BC (Golenko 1965: 57–59, no. 1). Both of these issues, the trihemiobol and the obols, have the same monogram, KT, which could be compared with the similar monogram on the Apollo/bowcase drachms. These coins with the same monogram should date to the same period (Golenko 1965: 60).

The second group of the Panticapaeon civic silver can also be dated by a group of large bronze coins with the monogram M (Plate 18 no. 20) (Shelov 1956: pl. VIII, 94; Anokhin 1986: pl. 6, 188). These bronze coins exactly duplicate the type and monogram of the Panticapaeon silver drachms of the second Apollo/bowcase group, struck from silver of good quality. The bronze alloy of this issue is of good quality (2.5% lead)—identical to the “yellow bronze” coins from Pontus (Smekalova 2000: 275). The Pontic yellow bronze coins started to circulate in the Bosphoran area around 150 BC (Karyshkovskii 1953: 108; Golenko 1964: 61 n.15; Molev 1994: 74; Nesterenko 1987: 80–82). The penetration into the northern Black Sea region of the Pontic alloy, used for the coinage of Sinope, Amisus, and Amastris and at the same time for Bosphoran bronzes of the second half of the second century BC; the finds of Panticapaeon drachms overstruck on silver from Amisus (in Pontus); the noted fluctuation in the quality of the metal of coins from both Pontus and Bosphorus; the archaeological evidence of increasing Sinopian imports in the Bosphoran region during the middle of the second century BC (Brashinskii 1963: 137; Saprikin 1996: 94–95)—all of these facts are important evidence of the growing mutual contacts between the two kingdoms earlier than the incorporation

of Bosphorus into the kingdom of Mithradates VI toward the end of the second century BC (about 110/108).

Another landmark to date the Spartocus didrachms is provided by the small Apollo/bowcase bronzes with the inscription ΠΑΝ (Plate 18 no. 21) (Shelov 1956: pl. VIII, 95). Many hoards of these coins (Fadeevo, Raevskaya, Vinogradnii, and Kumatyř) have been found near the sites of Kerch and Phanagoria and in the Anapa district (the ancient Gorgipia) (Nestineko 1987: 74–83; Abramzon 2002: nos. 14–18). These bronzes represent an extensive coinage that was struck through much of the second century. They can be dated through overstrikes. The Apollo/bowcase bronzes are overstruck on young satyr/bow-arrow coins with ΠΑΝ, dated to the first part of the third century BC (Abramzon 2002: 142 no. 4810; 144 no. 4874; 154 no. 4488; 173–174, 179). The Apollo-bowcase bronzes in their turn are overstruck with new types, such as the bull's head/plow, dated between 200 and 125 BC (Shelov 1965: 40; Abramzon 2002: 154–155, 161, 180), the Apollo/dolphin-ΠΑΝ (Abramzon 2002: 155), and also by the satyr/pileis-ΠΑΝΤΙ, satyr/cornucopia (Abramzon 2002: 144–146, 155, 185, 186; Salov 1974: 95, 97; Nesterenko 1987: 77–79). These last two series are dated to the last quarter of the second century BC (Shelov 1965: 40). Thus, the Apollo/bowcase bronze coinage was struck during a long period and can be dated from about the end of the third or the beginning of the second century BC to about 125 BC (Frolova 1998: 24; Abramzon and Frolova 2002: 212; Shelov 1956: 168; Shelov 1965: 40).

Among the coins of the Fadeevo and Kymatir' hoards, Nesterenko discovered a group that was struck on yellow bronze, which according to the hoard materials should be dated to the third quarter of the second century BC (Nesterenko 1987: 79–80, pl. II, 20). The head of Apollo was executed in a very fine style and the bowcase was in high relief, resembling that unusual feature on the Spartocus didrachms. These yellow bronze coins were overstruck in their turn by a multitude of new types around 125–100 BC (Nesterenko 1987: 80).

There are thus numerous landmarks to help narrow down the date of issue for the Spartocus didrachm.

First, the use of the trident and dolphin gives a *terminus post quem* of 195 BC, based on Marinescu's classification of Byzantium's coinage.

Second, the style of the obverse and the use of the identical monogram suggests that the coin dates from around the same time as the Paerisades IV coin from the Artjukhov kurgan, which we have dated to 160–145/140 BC.

Third, the fineness, the weight standard, and the use of a monogram correspond to the second group of Panticapaeon civic silver coinage. The Kerch hoard dates this Panticapaeon silver to the range of years 175–150 BC.

Fourth, the degradation in style, fineness, and weight standard in the third group of Panticapaeon civic silver coins corresponds to a degradation in the royal

gold coinage in the reign of the last Bosphoran king, Paerisades V. The first two groups of Panticapaeian silver should therefore be dated before this king's reign, and since the Spartocus silver didrachm corresponds to these first two groups, it too must antedate the reign of Paerisades V (ruled c. 140/130–111/108 BC).

Fifth, the monograms and type of the second Panticapaeum group—the group that is most analogous to the Spartocus didrachm—is duplicated by yellow bronze coinage with the monogram M. Yellow bronze began to circulate in the Bosphoran area around 150 BC.

Sixth, the Panticapaeian Apollo/bowcase coinage—and the Spartocus didrachm—must be contemporaneous with the bronze Apollo/bowcase series. This series was struck during the second century BC until about 125 BC.

Seventh, there are coins of the bronze Apollo/bowcase series with the bowcase in high relief and struck on yellow bronze. The Spartocus coins also display this unusual feature of a bowcase in high relief. Yellow bronze only enters the circulation of this region after 150 BC.

Thus, the Spartocus coinage must have been issued after 150 BC and before 140/130 BC. Since it cannot have been issued by Spartocus V, there must be another Spartocus among the Bosphoran rulers—a Spartocus VI. The reign of this Spartocus VI would have fallen between those of Paerisades IV and Paerisades V, the latter being the last king of the Bosphoran dynasty. Vinogradov suggested that Spartocus VI was the elder brother of Paerisades V and reigned immediately before him, and his suggestion is adopted here (Vinogradov 1987: 66). The reign, and the coin, can best be dated to around 140/130 BC.

The question remains why the Bosphoran kingdom altered its monetary policy in the reign of Spartocus VI and issued, for this brief time only, silver coins in its own name. The gold staters of the Spartocids are readily understood as part of the far-ranging circulation of lysimachi in the Black Sea area and as a declaration of sovereignty. The silver civic coinage of Panticapaeum is readily understood as a municipal coinage for local circulation. Why, however, did the Bosphoran rulers now feel a need to issue silver coins? It was not because of monetary stringency: the good weight and high fineness of the silver prove this.

The coinage must be understood as a part of the new power relations on the northern Black Sea littoral. Around the end of the fourth or the first part of third century BC, the "Great" Scythian domain was broken up and driven south and west by pressure from the Sarmatian tribes (Machinskii 1971: 42–54; Vinogradov and Marchenko 1991: 153–154). The Sarmatians held sway in the steppe between the Dnieper and the Don, and pressed the Scythians toward the Greek states. Some Scythians found a safe refuge in the Dobrudja region at the mouth of Danube (Andrukh 1995); others retreated and entrenched themselves in the territory of the Greek cities of the northern Black Sea region and the Crimea, where they consoli-

dated as a Scythian state (Shcheglov 1982: 185–198). In the mid-second century, during the reign of King Scilurus, the Scythians established their protectorate of Olbia (Frolova 1964: 44–55; Vinogradov 1989: 230–250). In the western Crimea, the Scythians exerted their pressure on the polis of Chersonesus and seized much of its *chora* (Shcheglov 1982: 193–197). Although the Bosporan kingdom too had to accommodate Scythian power, this was not expressed with the open warfare that Chersonesus encountered or the naked power politics that the Olbiapolitans had to acknowledge. The still-powerful Spartocid dynasty was able to achieve a careful management of their internal affairs vis-a-vis those of the Scythians. Epigraphic sources of the second century BC provide us with evidence of close marital relations between the royal and aristocratic families of the Bosporan and Scythian states (CIRB 75; Vinogradov 1980: 97). One of the latest pieces of epigraphic evidence for these relations was found during the 1978–79 excavations in the sanctuary on the acropolis of Panticapaeum by the archaeological expedition of the GMII (Moscow). This is a sacrificial table (dated around 140–110 BC) dedicated on behalf of a King Paerisades to a Scythian goddess, Dithagoea, by a daughter of the Scythian king Scilurus, who is referred to as the wife of one Heracleides, a Bosporan aristocrat who was possibly a member of the royal family (Vinogradov 1987: 55–86). This important artifact allows us to define Scythian-Bosporan relations not as hostile but, on the contrary, as friendly—sealed with dynastic kinship and apparently stimulated by definite political and economic treaties (Vinogradov et al. 1985: 725). With a new framework of Scythian power established on the basis of the Greek settlements of the northern Black Sea, the Greeks, the Scythians, and the Bosporans could now hold off the encroachment of the Sarmatians. A working alliance was concluded with the Scythians, and Scythian guards were admitted to the Bosporan cities (Vinogradov 1987: 81–86). Eventually, Scythian dominance became too much for the Greeks and Bosporans, and they finally chose Diophantus, the general of Mithradates VI of Pontus, as the lesser of two unpalatable evils. With the absorption of the northern Black Sea settlements (including the kingdom of the Bosporus) into Mithradates' Pontic empire, the history of the Bosporan kingdom ends.

It is in this context that the silver coinage of Spartocus VI might be understood. So long as the Scythians acted as a buffer and an ally of the Bosporan kingdom, they could be bought off by gifts paid directly to their kings in gold staters. When garrisons were admitted into the Bosporan cities, however, the Scythian soldiers had to be paid individually on a regular basis. Gold staters were an inconveniently large denomination: silver didrachms were what they expected. The civic silver issues of Panticapaeum were not adequate for this purpose. The soldiers had to be paid in coinage that would show which state they were supposed to fight for—not a semi-independent Greek polis, but a Hellenistic ruler—Spartocus VI, the basileus

of the Bosporan kingdom. This, probably, prompted the issue of Spartocus VI's silver didrachms.

LIST OF ILLUSTRATIONS

Plate 17

1. Didrachm of Spartocus (State Historical Museum, Moscow [cast])
2. Didrachm of Spartocus (ANS 1954.67.1)
3. Stater of Lysimachus from Byzantium (ANS 1967.46.111)
4. Stater of Lysimachus from Callatis (ANS 1967.46.106)
5. Stater of Lysimachus from Byzantium (ANS 1944.100.81450)
6. Stater of Lysimachus from Callatis (ANS 1944.100.81599)
7. Tetradrachm of Lysimachus from Byzantium (ANS 1944.100.81514)
8. Stater of Lysimachus from Tomis (ANS 1944.100.81593)

Plate 18

9. Stater of Paerisades from the Arjukhov kurgan (State Hermitage, St. Petersburg)
10. Drachm of the Apollo/bowcase type: first group (State Hermitage, St. Petersburg)
11. Drachm of the Apollo/bowcase type: second group (State Hermitage, St. Petersburg)
12. Drachm of the Apollo/bowcase type: third group (ANS 1944.100.26306)
13. Drachm of the Apollo/bowcase type: third group (ANS 1944.100.26305)
14. Drachm of Apollo/bowcase type: third group (ANS 1944.100.26312)
15. Stater of Paerisades (Collection of Dr. Lawrence A. Adams, California)
16. Stater of Paerisades (British Museum, London)
17. Stater of Paerisades from the Severskii kurgan (State Historical Museum, Moscow)
18. Silver obol of the Apollo/dolphin type (State Hermitage Museum)
19. Silver trihemiobol of the Athena/grain ear type (GMII, Moscow)
20. Bronze tetrachalkon of the Apollo/bowcase type (ANS 1944.100.26325)
21. Bronze chalkon of the Apollo/bowcase type (ANS 1944.100.26297)

REFERENCES

- Abramzon, M. G., N. A. Frolova, and Yu. V. Gorlov. 2002. *Kladi antichnikh monet na Yuge Rossii. Po materialam Krasnodarskogo kraya*. Moskva: Editorial.
- Andrukh, S. I. 1995. *Nijnedynaiskay Skifia v VI-nachale I v. do n. e.* Zaporozh'e: Gosudarstvennii Universitet.
- Bertier de la Garde, A. L. 1923. *Monnaies grecques antiques provenant des doubles du British Museum, des collections de feu le Général A. L. Bertier de la Garde et*

- de divers autres amateurs*. Genève: Naville & Cie.
- Brashinskii, I. B. 1963. *Ekonomicheskie svyazi Sinopi v IV-II vv. do n.e.* Antichnii gorod. Moskva.
- Burachkov, P. 1884. *Obshchii katalog monet, prinaddezhashchikh ellinskim koloniyam*. Odessa: Tip. A. Shultse.
- CIRB: Struve, V. V. 1965. *Corpus inscriptionum regni bosporani*. Moscow and Leningrad: Akademiya Nauk.
- Frolova, N. A. 1964. Moneti skifskogo tsarya Skilura. *Sovetskaya Arkheologia* 1: 44–55.
- . 1998. Klad Bosporskikh monet kontsa III-II vv. do n. e. (Kerch, 1996). Shestaya Vserossiiskaya Numizmaticheskaya konferentsiya. SPb.
- Giel, Ch. 1891. *Noviya priobreteniya moego sobraniya*. Saint Petersburg: Tip. Imperatorskoi Akademii Nauk.
- . 1895. *Opisanie monet, postupivshih v moe sobranie v 1892 i 1893 gg.* Saint Petersburg: Tip. I. N. Skorokhodova.
- Glendining & Co. Ltd. 1950. *Catalogue of the important collection of Greek, Roman, Republican, Byzantine and British coins formed by the late Henry Platt Hall, Esq.* Auction Catalogue, 19 July 1950.
- Golenko, K. V. 1955. Datirovka mednikh monet Pantikapeya kontsa III-II vv. do n. e. *Kratkie soobshcheniya instituta material'noi kul'turi* 58: 131–138.
- . 1964. Monetnaya med' gorodov Ponta i Paflagonii vremeni Mitridata VI v bosporskikh nakhodkakh. *Palestinskii Sbornik* 11(74): 58–73.
- . 1965. Dve moneti Pantikapeya II v. do n. e. *Numizmatika i Epigrafika* 5: 56–61.
- . 1968. Neskol'ko serebryanikh monet Pantikapeya II v. do n. e. so sledami perechekanki. *Numizmatika i Epigrafika* 7: 37–40.
- . 1982. Novaya moneta tsarya Spartoka. In: *Numizmatika Antichnogo Prichernomor'ya*, pp. 50–63. Kiev: Naukova Dumka.
- Karyshkovskii, P. O. 1953. Eshche raz o knige A.N. Zografa "Antichnie monety". *Vestnik Drevni Istorii* 1: 105–111.
- Köhler, H. K. E. 1824. Description d'une de Spartocus roi du Bosphore Cimmérien du cabinet de Mr. comte de Romanzoff. Saint Petersburg. Russian translation in *Archeologo-numizmaticheskii sbornik* [1850]: 137–161.
- Machinskii, D. A. 1971. O vremeni pervogo aktivnogo vistupleniya sarmatov v Podneprov'e po svidetel'stvam antichnih pis'mennikh istochnikov. *Arkheologicheskii sbornik Gosudarstvennogo Ermitaja* 13: 42–54.
- Maksimova, M. I. 1979. *Artyukhovskii kurgan*. Leningrad: Iskusstvo.
- Marinescu, C. A. 1996. *Making and spending money along the Bosphorus: the Lysimachi coinage minted by Byzantium and Chalcedon and their socio-cultural context*. Ph.D. dissertation, Columbia University.

- . 2001. From Byzantium to the Black Sea: dies, engravers and the production of posthumous Lysimachi coinage during the 3rd–2nd century B.C. In: *Numismatic and sphragistic contributions to history of the western Black Sea coast: international conference, Varna, September 12th–15th, 2001*. Acta Musei Varnaensis 2.
- Nesterenko, N. D. 1987. Zametki po denejnomu obrashcheniyu medi Bospora poslednei chetverti II v. do n. e. *Vestnik Drevnei Istorii* 2: 74–83.
- Salov, A. I. 1974. Klad bosporskikh monet iz poselka Vinogradnoe. *Numismatika i Epigrafika* 11: 94–98.
- Saprikin, S. Yu. 1996. *Pontiiskoe tsarstvo: gosudarstvo grekov i varvarov v Prichernomor'e*. Moskva: "Nauka".
- SEG: *Supplementum epigraphicum graecum*.
- Shcheglov, A. N. 1985. O greko-varvarskikh vzaimodeistviyakh na periferii ellinisticheskogo mira. Prichernomor'e v epokhu ellinizma. Tskhaltubo III, 1982. Tbilisi: Metsniereba.
- Shelov, D. B. 1956. *Monetnoe delo Bospora VI–II vv. do n. e.* Moscow: Akademiya Nauk SSSR.
- . 1965. Materiali k istorii Denejnogo obrashchehiya v gorodakh Bospora v VI–I vv. do n. e. *Numismatika i Epigrafika* 5: 31–50.
- Smekalova, T. N. 2000. Znachenie izucheniya sostava monetnikh splavov dlya antichnoi numizmatiki (na primere Bospora). *Drevnosti Bospora* 3: 260–289.
- SNG BM. 1993. *Sylloge nummorum graecorum, the British Museum*. Vol. 9, part 1: *The Black Sea*. London: British Academy, British Museum Press.
- SNG Stancomb. 2000. *The William Stancomb collection of coins of the Black Sea region. Sylloge nummorum graecorum*, vol. 11. Oxford: The British Academy, Oxford University Press, and Spink and Son.
- Stolyarik, E. 2000. The gold coinage of the Bosporan kingdom under the late Spartocids. In: *XII Internationaler Numismatischer Kongress, Berlin 1997: Akten*, pp. 378–383. Berlin: Staatliche Museen zu Berlin.
- Vinogradov, Yu. G. 1980. Persten' Tsarya Skilura. *Sovetskaya Arkheologiya* 3: 92–100.
- . 1987. Votivnaya nadpis' docheri Tsarya Skilura iz Pantikapeya i problemi istorii Skifii i Bospora vo II veke do n. e. *Vestnik Drevnei Istorii* 1: 55–86.
- . 1989. *Politicheskaya istoriya Ol'vijskogo polisa*. Moscow: Nauka.
- and K. K. Marchenko. 1991. Severnoe Prichernomor'e v skifskuyu epokhu. Opit periodizatsii istorii. *Soverskaya arkheologiya* 1: 145–155.
- , E. A. Molev, and V. P. Tolstikov. 1985. Novie epigraficheskie istochniki po istorii Mitridatovoi epokhi [New epigraphic sources on the history of the period of Mithradates]. Prichernomor'e v epokhu ellinizma. Tskhaltubo 1982. pp. 589–600, 725–727. Tbilisi.

Zograph, A. 1951. *Antichnye moneti*. Materialy i issledovaniia po arkheologii SSSR
16. Moscow: Akademiya Nauk SSSR.

Another Fimbria Cistophorus

PLATE 19

RICHARD B. WITSCHONKE* AND MICHEL AMANDRY**

This article summarizes the historical background of C. Flavius Fimbria, collects published information on the three known specimens of the FIMBRIA IMPERAT cistophorus, and tentatively attributes the issue to Pergamum in 85 BCE.

Recently, a third example of the anomalous FIMBRIA IMPERAT cistophorus has appeared. We have taken this occasion to collect the scattered references to this coinage, and to attempt to shed further light on the circumstances surrounding its production. The three known specimens are as follows:

1. Ashmolean Museum, Oxford. 11.34 g, 26 mm, 12:00 die axis. Purchased from R. Hecht, Rome, 1959. Plate 19, n. 1.
2. Boston Museum of Fine Arts, accession no. 1987.301. 11.51 g, 25.5 mm, 12:00 die axis. Purchased from R. Hecht, 6/24/87. Plate 19, n. 2 (Photograph © 2005 Museum of Fine Arts, Boston).
3. Private collection. 11.24 g, 26 mm, 12:00 die axis. Purchased from W. Sayles, 7/04. Plate 19, n. 3.

Surprisingly, none of the three specimens shares either an obverse or a reverse die.

*The American Numismatic Society, 96 Fulton St., New York, NY 10038, USA (witschonke@numismatics.org).

**Bibliothèque nationale de France, 58 rue de Richelieu, 75084 Paris cedex 02, France (michel.amandry@bnf.fr).

The Oxford specimen was first published by Sutherland in 1960 (Sutherland 1960: 25–6, plate 8 no. 8), where it is attributed to C. Flavius Fimbria, the renegade Marian commander, at Pergamum (86–85 BCE). The coin is now, however, kept under Laodicea. The coin is next mentioned by Kraay in 1961 (Kraay 1961: 289, preface to 2nd ed.), and by Crawford in 1985 (Crawford 1985: 208n.), who dates the coin to the 40s, based on information from Charles Hersh. In 1989, Martin also attributes the coin to Laodicea in the 40s, based on information from Hersh (Martin 1989: 25 no. 19.). Unfortunately, no additional evidence for this attribution can be located. The coin is next mentioned by de Callataÿ in 1997, who discusses the types (de Callataÿ 1997: 323–324, plate 42 no. F).

The Boston specimen (no. 2., above) was published by Vermeule in 1989, where the coin is dated to 85 BCE and tentatively assigned to Pergamum (Vermeule 1989: 25–26). Interestingly, Charles Hersh is credited with having contributed to this attribution (Vermeule 1989: 4).

The third specimen has not been previously published. It was acquired some years ago with a group of miscellaneous unattributed cistophori that did not appear to constitute a hoard. It was finally identified with assistance from Philip Kinns.

To understand the circumstances of this coinage, it is perhaps helpful to briefly review the historical situation. In 89 BCE, Rome was in a state of chaos.¹ The Social War had just concluded, and the First Mithradatic War with Mithradates VI of Pontus had just begun. The Marians were locked in a struggle with the Sullans for control of Rome. Sulla was elected consul in 88. Initially, he was to take command of the war against Mithradates, but was opposed by the Marians. He defeated his opponents, killed or exiled many of them, and in 87, left for Greece. The consul Cinna thereupon recalled Marius from exile and visited a reign of terror upon Rome, killing many of Sulla's supporters. In 86, Cinna and Marius were consuls, and Marius was to take command in Asia (Sulla had been declared an outlaw), but Marius died early in the year, and was replaced as consul and commander by L. Valerius Flaccus.

Since Flaccus was inexperienced as a military commander, C. Flavius Fimbria, a supporter of Marius and Cinna, was assigned to accompany him as legate (or quaestor).² Fimbria came from an historically pro-Marian family: his presumed

1. For details of the period, with references to primary sources, see D. Magie, *Roman Rule in Asia Minor*, 2 vols. (Princeton, 1950), 210–233 and 1101–1111; T. R. S. Broughton, *The Magistrates of the Roman Republic* (New York, 1952), 2: 39–59; and de Callataÿ (1997: 313–324).

2. For a discussion of the possibilities, see. A. W. Lintott, "The Offices of C. Flavius Fimbria in 86–5 BC," *Historia* 20 (1971): 696–701; and T. R. S. Broughton, *The Magistrates of the Roman Republic*, vol. 3, *Supplement* (New York, 1986), 92.

father, C. Flavius C.f. Fimbria, was consul with Marius in 104 (*RE* VI 1909: 2598–2599, Flavia 87; Broughton 1986: 58). The younger Fimbria is first noted in 87, when, as part of the Marian repression, he was apparently involved in the killing of the younger Crassus and some of the Julian family (*RE* VI 1909: 2599, Flavia 88; Broughton 1952: 49). He was then sent to enlist the support of the Samnites for the Marians (Broughton 1952: 50). Fimbria accompanied Flaccus to Epirus where, instead of relieving Sulla of his command, they plundered their way through Macedon and Thrace to the Bosphorus (Magie 1950: 222). At this point, the sources diverge somewhat, but are in agreement that Flaccus relieved the now insubordinate Fimbria, whereupon the troops revolted and supported Fimbria as commander. Flaccus escaped to Nicomedia, but was pursued, captured, and killed (Magie 1950: 226; *RE* VI 1909: 2599–2600). Assuming command, Fimbria vigorously pursued the conflict, defeating the identically named son of Mithradates in a major battle near the river Rhyndacus in early 85 (Magie 1950: 227). He then took Cyzicus and proceeded to Pergamum, where Mithradates had taken refuge. When Pergamum fell to Fimbria, Mithradates escaped to Pitane, and ultimately to Mitylene, by sea. Having no fleet, Fimbria was powerless to stop Mithradates, and Sulla's admiral Lucullus refused help (Magie 1950: 227–228; *RE* VI 1909: 2600). Fimbria then plundered his way northward and burned Ilium. Ironically, throughout this period, Sulla was engaged in peace negotiations with Mithradates and, in the fall of 85, the king was granted fairly generous terms, so that Sulla could turn his attention to Rome. Meanwhile, Fimbria had retreated to Thyateira, where Sulla besieged him. As Fimbria's troops began to desert, he agreed to surrender in exchange for his life. Heading for the coast, he got only as far as Pergamum, where he fell on his sword (Magie 1950: 228–233).

During this brief career, where and when did Fimbria strike his cistophori? Logically, they should fall between his revolt (and presumed proclamation as Imperator) in early 85 and his downfall in the autumn of 85. And, if one follows Fimbria's known itinerary during this period (Figure 1), it is clear that he was only close to two active cistophori mints: Adramyteum and Pergamum. Adramyteum was a relatively minor mint, and there is no record of Fimbria's presence there, although he presumably came close on his march from Pitane to Ilium. Pergamum during this period had a closely spaced cistophoric coinage (Kleiner 1978: 77–105, plates 10–17), but there is certainly room for a brief emergency military issue. And since Fimbria was at the height of his brief period of power during his siege of Mithradates, Pergamum seems a likely candidate for his mint (Sutherland 1997; Vermeule 1989).

The obverse type of Fimbria's cistophorus (the cista mystica with snake emerging) is entirely conventional. At this point, no links have been found with other cistophori, but they may well exist. One interesting note is that the Boston and new

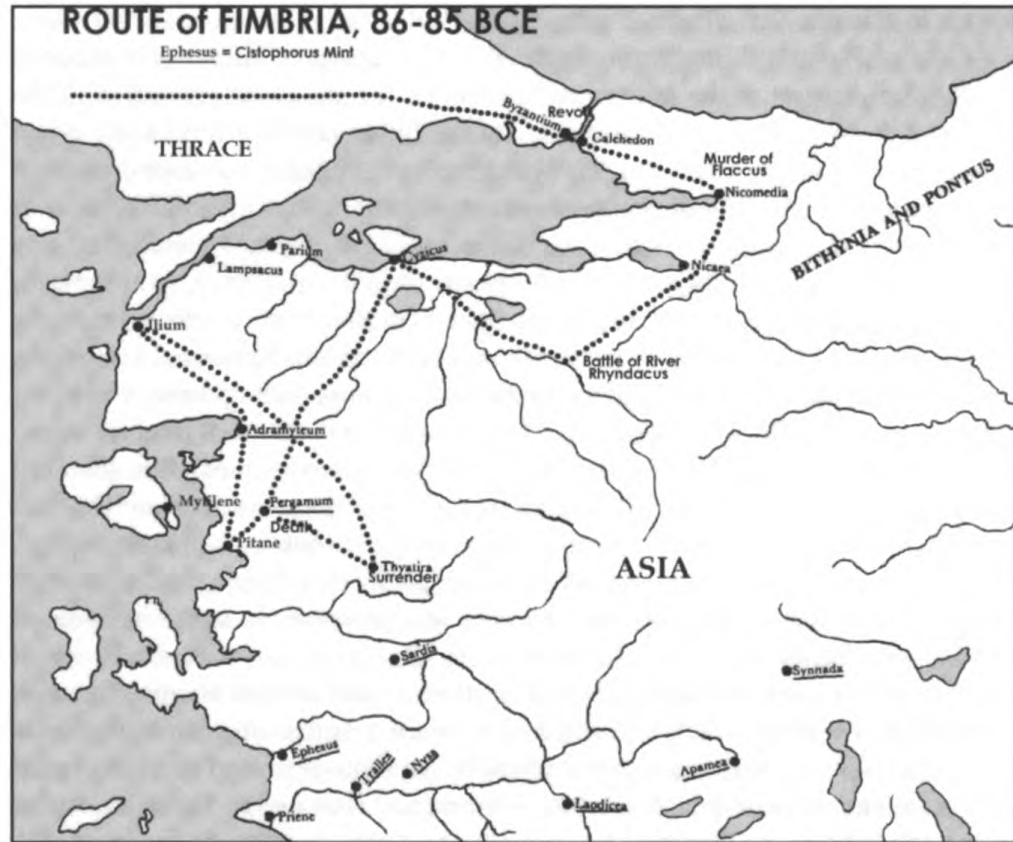


Figure 1. Route of Fimbria, 86–85 BCE

specimens have a squat cista, consistent with the style at Pergamum at this period. The Oxford piece, however, has a rather narrow cista.

The reverse types of this coinage are, however, unique in the cistophorus coinage. The legend *IMPERAT FIMBRIA* flanks a scepter surmounted by a crescent and a winged caduceus. On normal cistophori, we find a bowcase flanked by serpents, usually with a mint mark on the left and a mint symbol on the right. On this issue, there is no mint mark, unless the caduceus is an allusion to Laodicea, which uses the winged caduceus on all of its cistophori of this period. But, as de Callataÿ points out, the winged caduceus is also found on dated cistophori of Ephesus and bronzes of Atarneus struck by Cn. Asinius (de Callataÿ 1997: 324). As for the scepter, Vermeule suggests that it is an allusion to the Attalid temple of Cybele near Pergamum, where the coins were perhaps struck (Vermeule 1989: 25).

Since these coins first appeared, there have been questions regarding their authenticity, provoked both by their anomalous types and their fabric. To address these questions, a metallurgical analysis was performed on specimen 3 of Fimbria, as well as on two contemporary cistophori of Laodicea (because the Oxford speci-

men is kept under that mint) from the Paris collection. The coins were analyzed by fast neutron activation at the Centre Ernest-Babelon - IRAMAT - UMR 5060, CNRS, Orléans, by J.-N. Barrandon. The results are as follows:

Official	Date	Paris	Ag	Cu	Pb	Sn	Sb	As	Au
A. Diodorus	132–67	CM2719	97.3	1.05	1.15	0.0006	0.0003	0.002	0.50
B. Fimbria	85 ?		97.3	1.4	0.34	0.0007	0.0003	0.01	0.9
C. Balbus	58	CMR3909	94.0	4.76	0.78	0.0007	0.0004	0.01	0.42

The first coin is a cistophorus of Laodicea signed by Diodorus (*BMC* 8). Unfortunately, there is no detailed study of the cistophori of Laodicea of this period, so the date range is rather broad. However, both the fineness and trace element profile of this coin is very similar to the Fimbria (coin B). The third coin (C) is a cistophorus of T. Ampius Balbus, part of a group of proconsular cistophori struck in the 50s.³ The lower fineness (94%) indicates that the Fimbria coin was not part of this group.

In his 1976 study, Walker analyzes the composition of thirty-two cistophori of this period: twelve from Ephesus and twenty from Pergamum (Walker 1976: 26–28 and 33–34). Walker organizes his analysis based on the dating proposed by Kleiner (Kleiner 1972, 1978). Although the sample size is small, one can make the following generalizations from Walker's data: At Ephesus, the cistophori of the early Roman period (132–109) had a fineness of 97% and above. In the late 80s and early 70s, this dropped to c. 95%, and in the early 60s, to c. 80%. There was then an increase to c. 91% with the proconsular issues of the 50s (one coin). At Pergamum, the results are less consistent.⁴ As at Ephesus, the early Pergamene issues, down to 104, are all 95% or more. However, from 104 to 67, the fineness is uneven, ranging from 98% to 74.5%, with no clear pattern. Given the limitations of the data, it is not unreasonable that a cistophorus of 97% could have been struck by Fimbria in Pergamum in 85. Walker's final coin is a proconsular issue of Pergamum, again around a fineness of 92%.

In conclusion, the Fimbria cistophorus was probably struck at Pergamum in 85, and, given the lack of die links, was probably a larger issue than one might assume from its rarity today. And if the dating to 85 is correct, Fimbria was the first

3. For the names of provincial governors who struck cistophorii in Asia from 58 and Cilicia from 56, see Crawford (1985: 208). In a footnote, Crawford mentions the Fimbria coin, which he dates in the 40s, following Hersh. He also mentions an Atratinus Quaestor, who is the same as the "L. Antonius Quaestor, Pro-q in Asia, 50–49" in his list.

4. In his analysis of the Pergamene cistophori, Walker breaks them into Kleiner Group II (123–95) and Group III (95–67) (Walker 1976). If one assigns each of the specimens analyzed to the finer chronological groupings proposed by Kleiner, a more detailed picture emerges.

Roman to declare himself Imperator on his coinage, preceding Sulla (Crawford 1974: 373–374 no. 359/2) by a year or two.

ACKNOWLEDGEMENTS

The authors would like to thank the following for their assistance in the preparation of this article: J.-N. Barrandon, the Boston Museum of Fine Arts, F. Campbell, M. H. Crawford, V. Heuchert, C. J. Howgego, T. R. Martin, W. Sayles, and A. S. Walker.

REFERENCES

- Broughton, T. R. S. 1952. *The magistrates of the Roman Republic*. New York.
- Broughton, T. R. S. 1986. *The magistrates of the Roman Republic*, vol. 3, *Supplement*. New York.
- Crawford, M. H. 1974. *Roman Republican coinage*. London.
- . 1985. *Coinage and money under the Roman Republic*. London.
- de Callatay, F. 1997. L'Histoire des guerres mithridatiques vue par les monnaies. *Numismatica Lovaniensia* 18: 323–324.
- Kleiner, F. S. 1972. The dated cistophori of Ephesus. *American Numismatic Society Museum Notes* 18 (1972): 17–32.
- Kleiner, F. S. 1978. Hoard evidence and the late cistophori of Pergamum. *American Numismatic Society Museum Notes* 23 (1978): 77–106.
- Kraay, C. M. 1961. *Sources for Roman history 133–70 B.C.*, ed. E. W. Gray, 2nd ed., 289 and preface to the 2nd ed. Oxford.
- Lintott, A. W. 1971. The offices of C. Flavius Fimbria in 86–5 B.C. *Historia* 20 (1971): 696–701.
- Magie, D. 1950. *Roman rule in Asia Minor*, 2 vols. Princeton.
- Martin, T. R. 1989. Sulla Imperator Iterum, the Samnites and Roman Republican coin propaganda. *Revue Suisse de Numismatique* 68 (1989): pp.19–44.
- RE: A. Pauly, G. Wissowa, and W. Kroll, 1894–1978. *Real-Enzyklopädie der klassischen Altertumswissenschaft*. 34 vols. (Stuttgart: Metzler).
- Sutherland, C. H. V. 1960. Report of the Keeper of the Heberden Coin Room for the year 1959. In *University of Oxford, Ashmolean Museum, Report of the Visitors, 1959*. Oxford.
- Vermeule, C. C. 1989. *Greek imperial coins. 1986 and some 1987 Additions to the collections*. Department of Classical Art, Museum of Fine Arts. Boston.
- Walker, D. R. 1976. *The metrology of the Roman silver coinage*, part 1, *From Augustus to Domitian*. BAR Supplementary Series 5. Oxford.

Multiple Hoards of the Second Century AD from the Sanctuary of Zeus Olympios at Dion (Macedonia)

PLATES 20–23

SOPHIA KREMYDI-SICILIANOU*

This article discusses three hoards that were recently discovered through excavations at the site of Dion in Macedonia. They contain a total of 1,800 bronze coins and their contents are similar and contemporary. Over 90% of the coins belong to the local mint and the large majority date to the reign of Antoninus Pius. The Dion hoards offer valuable evidence for the dating of the pseudoautonomous issues that were included and contribute to our knowledge on numismatic circulation. An attempt is made to relate the hoards with their archaeological context and to discern the reason the currency was retired from circulation and subsequently lost.

THE ARCHAEOLOGICAL CONTEXT

Dion was a Macedonian city situated in the foothills of Mount Olympos, on the main coastal road that connected Macedonia to southern Greece. Traveling from Thessaly to the north, one enters Macedonia after passing through the narrow Tempe valley traversed by the river Peneos and after a few miles arrives at Dion. Under the Empire, the city was transformed into a Roman colony (*Colonia Diensis*) and its territory was expanded (Papazoglou 1988: 108–111; Kremydi-Sicilianou 1996: 12–17).

During the regal period, Dion was the religious center of the Macedonians where Zeus Olympios was worshipped; excavations of the site conducted by the University of Thessalonike under the direction of Prof. D. Pandermalis have

*Research Center for Greek and Roman Antiquity, The National Hellenic Research Foundation, 48 Vas. Constantinou Av., 116 35 Athens, Greece.

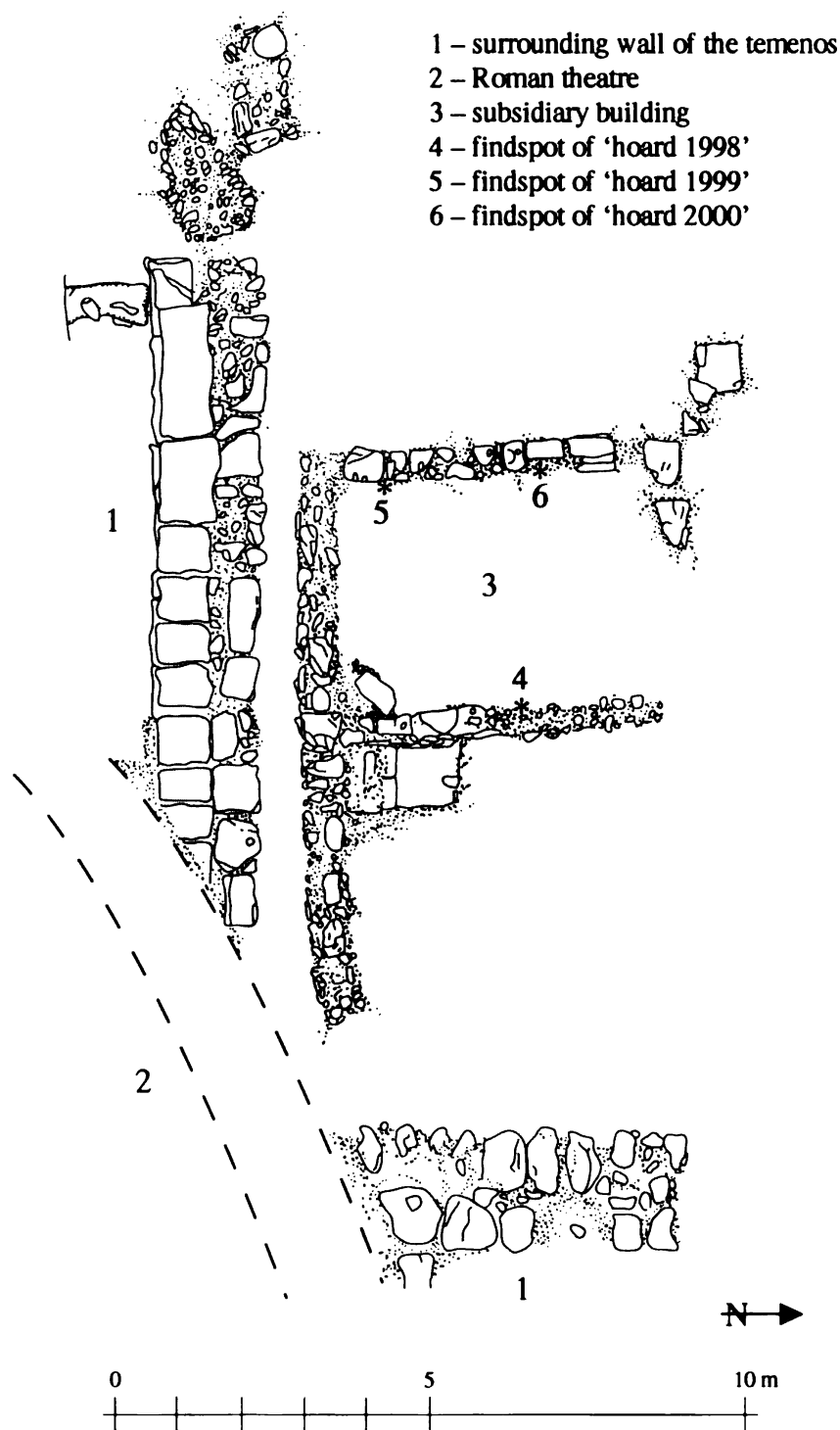


FIGURE 1.

located this sanctuary in an area to the south of the city walls (*AEMTh* 9 [1995]: 169; *AEMTh* 10 [1996]: 205; *AEMTh* 12 [1998]: 291–292; Pandermalis 1999: 44–49). Important public inscriptions such as royal letters and treaties have been unearthed inside the *temenos* and we know from written sources that the renowned Olympia were celebrated there every four years; on special occasions the games were accompanied by celebrations of military victories (Steph. Byz., s.v. Διον; Diod. Sic. 17.16.3–4. For discussion and bibliography: Mari 1998; 2002: 51–60).

The sanctuary of Zeus at Dion is referred to by Titus Livius (44.7.2–3) when describing the arrival of the Romans in Macedonia during the Third Macedonian War. Once the consul (Marcius Philippus) arrived at the city with his army, “he ordered his camp to be pitched next to the temple itself so that no sacrilege against the sacred precinct might be committed”. But the fate of this sanctuary after the Roman conquest remains obscure. An inscription from Kassandreia, dated probably to around 100 BC (Robinson 1938: 64, dates to the second century BC; Moretti 1953: no. 54, dates to c. 100 BC) is the latest known reference to the Olympic games. The traditional Macedonian cult of Zeus Olympios, so closely linked to the royal family, was an unsuitable choice for Roman colonists, and colonial issues bear Athena as their principal coin type down to the reign of Hadrian (Kremydi-Sicilianou 1996: 88–89, 94). Although the worship of Zeus Olympios under the Empire seems to have been neglected, an impressive sanctuary of Zeus Hypsistos has recently been revealed a few hundred meters to the north (*AEMTh* 17 [2003]: 417–424).

Sometime in the second century AD, possibly during the reign of Hadrian, the area of the Hellenistic sanctuary was transformed and a theater was constructed inside it. The theater foundations extended over the surrounding wall of the Hellenistic precinct (*temenos*), which was therefore no longer in use. Excavations of the site have recently revealed a small subsidiary building, consisting of two rooms, very close to the Roman theater (Fig. 1). The proximity of this building to a large construction such as the theater—its southern wall is at a distance of only a couple of meters from the *koilon*—has led to the conclusion that it was constructed after the completion of the theater. In the western room of this building, three coin hoards were revealed, consisting of exclusively bronze coins.¹ They were all concealed in clay pots and hidden beside the three walls of the same room.

THE CONTENTS OF THE HOARDS AND THEIR BURIAL DATE

The hoard discovered in October 1999 is by far the largest of the three and contains 1,590 bronze coins (Table 1, Figs. 2 and 3). Of these, 1,452 (over 91%) are coins of the local mint of Dion (Kremydi-Sicilianou 1996: 175–190, pls. 2–7; 254–255, issue V, pl. 29 nos. 10–21) (Plate 20 nos. 1–12, Plate 21 nos. 16–17). The

1. A detailed publication of these hoards can be found in Kremydi-Sicilianou (2004).

Table 1. Dion 1999 hoard.

	DION	AMPHIPOLIS	PHILIPPI	THESSALONIKE	EDESSA	MACEDONIAN KOINON	THESSALIAN KOINON	CORINTH	MAGYDOS	TRALLEIS	UNCERTAIN GREEK CITY	ROME	UNIDENTIFIED	TOTAL
Claudius	1													1
Nero	2													2
Vespasian				1								1		2
Titus												1		1
Domitian	3					1								4
Nerva												1		1
Trajan	68			3								3		74
Hadrian	119				2	14	47	2				8		192
Antoninus Pius	1162	1				20			1			1		1186
Pseudoauton.	97		7	9		4				1				119
TOTAL	1452	1	7	13	2	39	47	2	1	1	1	15	9	1590

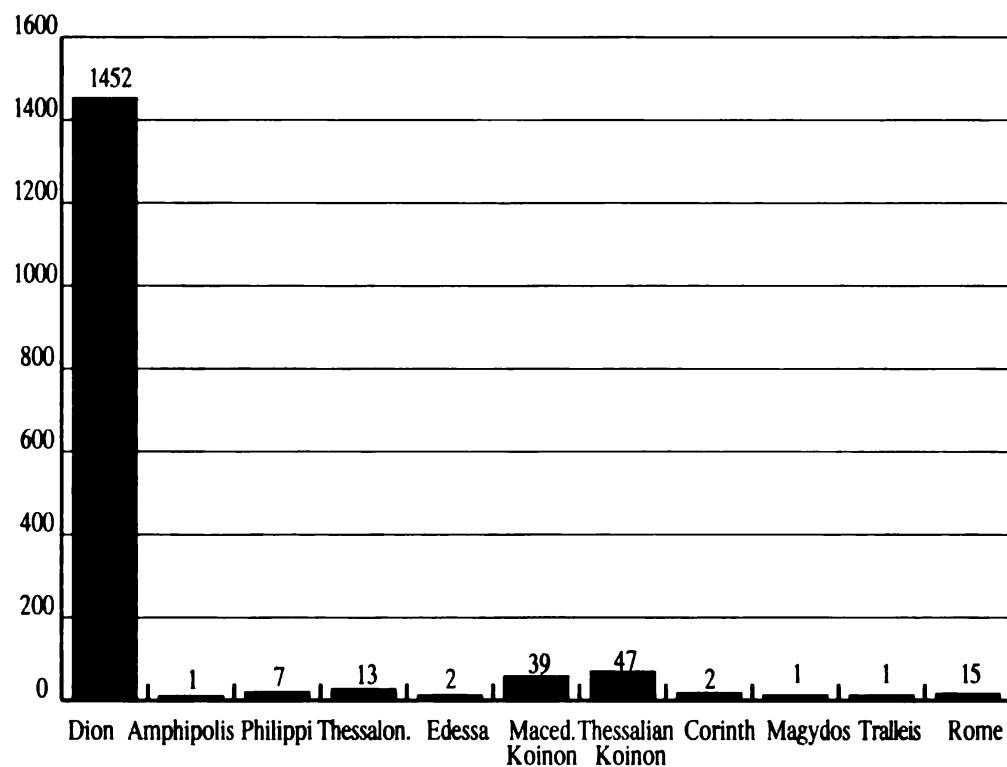


FIGURE 2. Dion 1999, coins per mint.

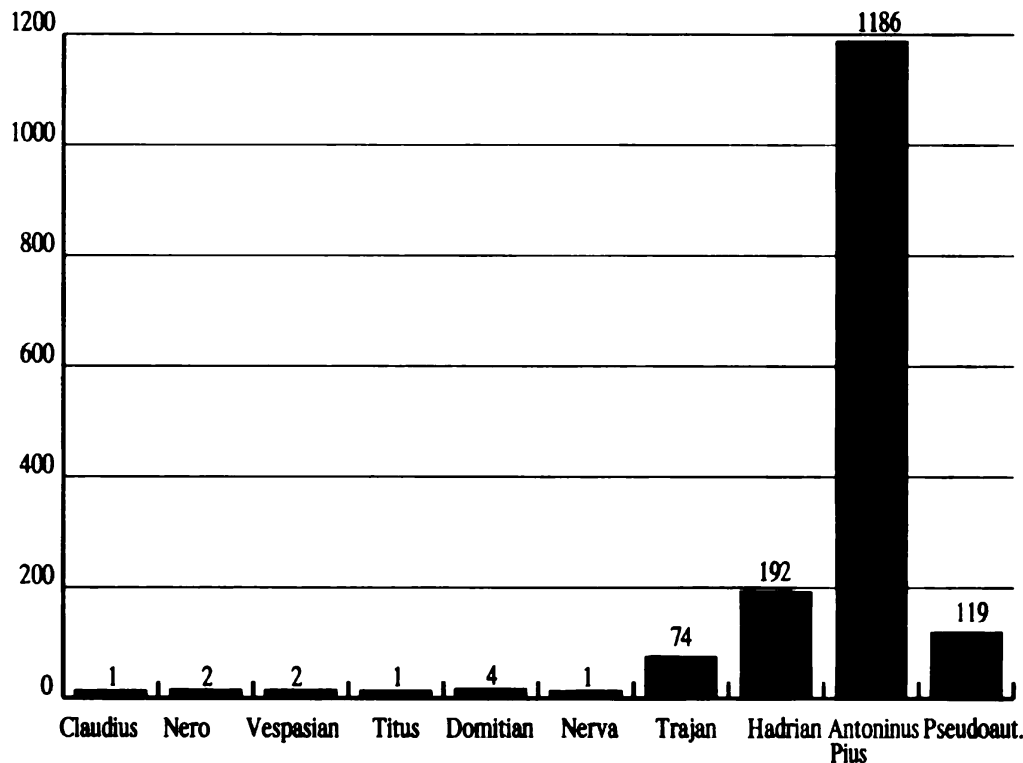


Figure 3. Dion 1999, coins per emperor.

second mint in the hoard is that of the Thessalian Koinon with 47 coins, all of the same type (Burrer 1993: 180–193, pls. 16–19) (Plate 22 nos. 34–35), whereas other Macedonian mints are present in very small numbers: 39 coins of the Macedonian Koinon (Gaebler 1906: nos. 252–54, 256, 263–65) (Plate 21 nos. 22–25, Plate 22 no. 26), 13 of Thessalonike (Touratsoglou 1988: 181–82, nos. 21–35; 186–87, nos. 1–12; 188–89, nos. 26–44; 320–21, issue IID or E; 328–29, issue VI/E, nos. 3–22; 331, issue VI/G, nos. 1–8; 329–330, issue VI/E, nos. 23–28) (Plate 22 no. 29), 7 of the colony of Philippi (*RPC* I, no. 1651) (Plate 22 nos. 30–31), 2 of Edessa (Gaebler 1935: nos. 2–3; Papaefthymiou 2002: 49–50, nos. 2–30) (Plate 22 no. 32), and 1 of Amphipolis (Gaebler 1935: no. 82) (Plate 22 no. 33). The percentage of the Macedonian coins, with the exception of local issues, is less than 4% of the total, whereas issues from the neighboring colonies of Pella and Kassandreia are totally absent. Apart from the few Macedonian and Thessalian coins the Dion 1999 hoard also contained two specimens from Corinth (*BMC Corinth* 75 no. 598, pl. 19 no. 17; Lanz 2001: no. 105) (Plate 22 no. 36), and two from Asia Minor: one from Magydos, a small city in Pamphylia (*BMC Lycia* 115 no. 3, pl. 23 no. 12) (Plate 22 no. 38), and one from Tralles in Lydia (*BMC Lydia* 339 no. 88 or 340 no. 89) (Plate 22 no. 37). A small fragment of an uncertain issue minted in the name of the deified Faustina Major and her deceased son Galerius Antoninus was also encountered (Overbeck 1971: 255, nos. 17–23, pls. 26–27; Amandry 1993: 16–17, nos. 16–17,

Table 2. Dion 2000.

	DION	MACEDONIAN KOINON	THESSALONIKE	THESSALIAN KOINON	ILION	UNCERTAIN	TOTAL
Claudius		1					1
Trajan	2		1				3
Hadrian	9			4	1		15
Antoninus Pius	97						84
Pseudoauton.	12		1				13
uncertain						1	1
TOTAL	120	1	2	4	1	1	129

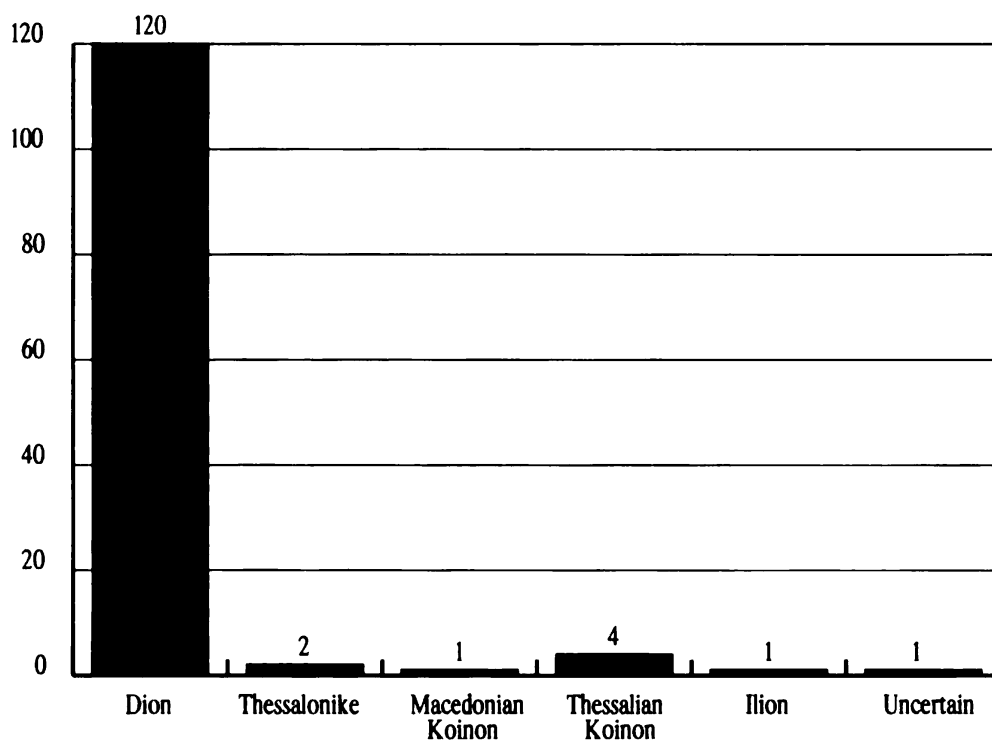


FIGURE 4. Dion 2000, coins per mint.

ill. 13) (Plate 23 no. 40). Last but not least, one should mention the fifteen bronze coins of the mint of Rome (dupondii/asses and sestertii) which were also included (*BMCRE* II: no. 293; *HCC* II: 141, no. 452; *BMCRE* III: nos. 119, 1015, p. 220, nos. 1143, 1313, 1435, 1644, 1446–49, 1744, 1329; *BMCRE* IV: no. 1375) (Plate 23 nos. 41–44).

Concerning their dates of issue (Fig. 3), only 11 coins of this hoard belong to the first century AD, whereas 1,452 specimens (91.3%) are dated by their portraits to the reigns between Trajan and Antoninus Pius. Among these, 1,186 coins (74.6%) belong to issues in the name of Antoninus Pius. It is evident that the

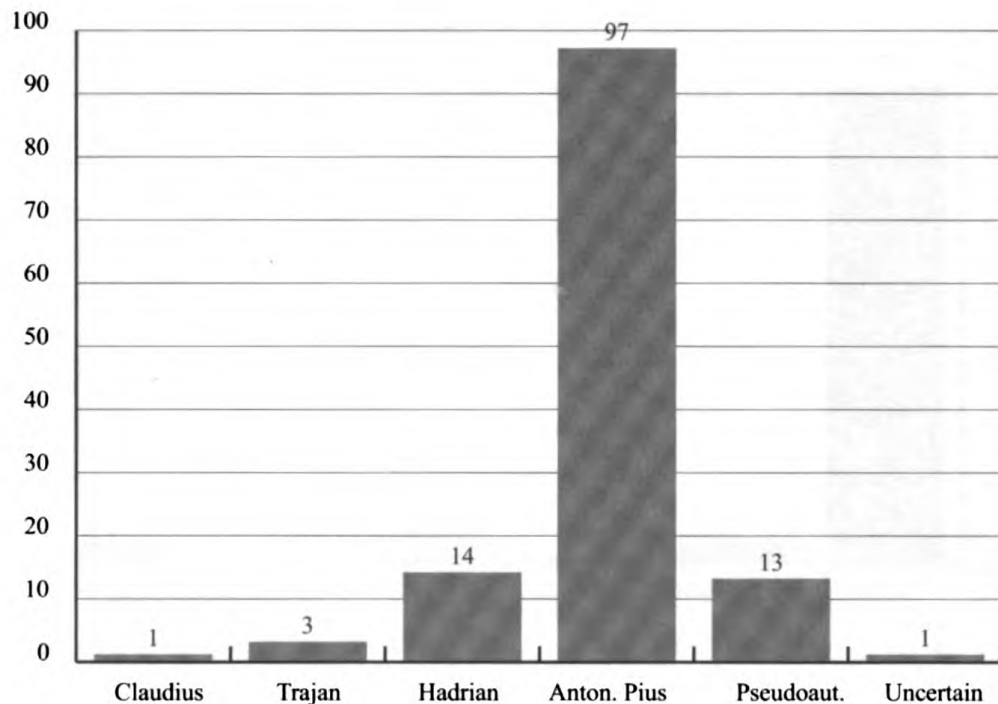


FIGURE 5. Dion 2000, coins per emperor.

chronologically restricted composition of the hoard offers valuable evidence for the dating of the pseudoautonomous issues which are included.

In the summers of 1998 and 2000, two other coin hoards were discovered at a very small distance from the one described above. They both contain a significantly smaller number of coins but their composition is very similar to the Dion 1999 hoard. Dion 2000 (Table 2, Figs. 4 and 5) consists of 129 bronze coins, of which 120 (93%) belong to the local mint (Kremydi-Sicilianou 1996: 179–190, pls 3–7; 254–255, issue V, pl. 29 nos. 10–21) (Plate 21 nos. 13–15, 18–21). Apart from these the hoard contains four coins of the Thessalian Koinon (Burrer 1993: 180–193, pls 16–19), two of Thessalonike (Touratsoglou 1988: 188–189, issue II, pls 15–16; 318, issue I/E, pl. 47) (Plate 22 nos. 27–28), one of the Macedonian Koinon (Gaebler 1906: 76–77 nos. 237–239, pl. 3 no. 14; *RPC I*, 1610 or 1611), and one coin of Ilion in Troas (von Fritze 1902: 52; Bellinger 1961: T132) (Plate 23 no. 39).

Dion 1998 (Table 3, Figs. 6 and 7) is even smaller and contains 81 coins, of which 72 (89%) belong to the local mint (Kremydi-Sicilianou 1996: 179–190, pls. 3–7; 254–255, issue V, pl. 29 nos. 10–21), 3 to Thessalonike (Touratsoglou 1988: 188–189, nos. 26–44, pls 15–16; 329–330, nos. 23–28, issue VI/E, pls 49–50), 1 to the Macedonian Koinon (Gaebler 1906: 81, no. 256, pl. 3 no. 16), and 1 to Philippi (Gaebler 1935: 102–103, nos. 14–15, pl. 20, no. 10; *RPC I*, 1651), whereas 3 very worn coins are probably from Rome. Both hoards contain mostly second-century issues with a very high percentage of coins in the name of Antoninus Pius (Figs. 5 and 7).

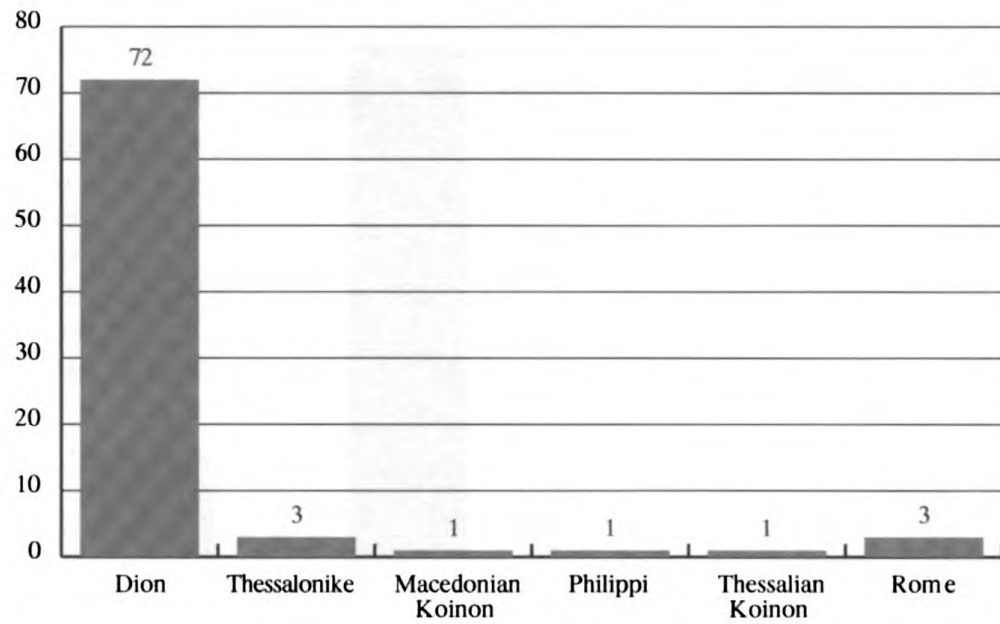


FIGURE 6. Dion 1998, coins per mint.

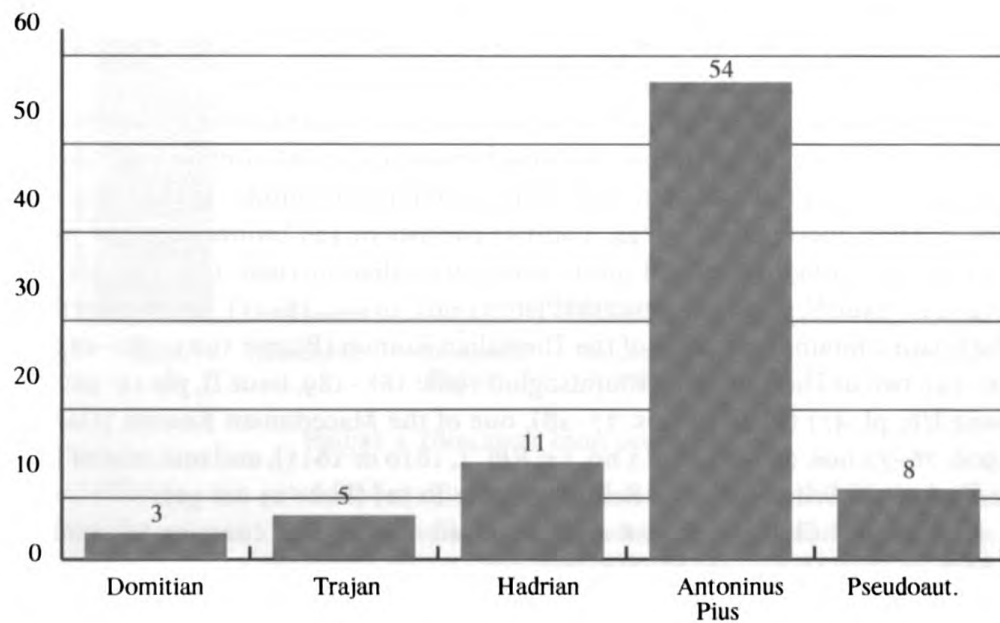


FIGURE 7. Dion 1998, coins per emperor.

Table 3. Dion 1998.

	Dion	Thessa- lonike	Macedo- nian K.	Philippi	Thes- salian K.	Rome	Total
Domitian	1					2	3
Trajan	3	2					5
Hadrian	8		1		1	1	11
Antoninus Pius	54						54
Pseudoau- tonomous	6	1		1			8
Total	72	3	1	1	1	3	81

The complete absence of specimens of Marcus Aurelius as emperor from our hoards² shows that they were concealed before such coins were available. Datable issues within the reign of Antoninus Pius (AD 138–161) include one coin in the name of the deified Faustina Major (Overbeck 1971: 255, nos. 17–23, pls 26–27; Amandry 1993: 16–17, nos. 16–17, ill. 13) that provides a *terminus post quem* of AD 141, the year of her death and official deification, and a Roman as in the name of Antoninus Pius, minted during his third consulate and dated between AD 140 and 144 (*BMCRE* IV: no. 1375). This is the only Roman coin of Antoninus Pius in our hoards and it was struck early in his reign. Internal chronological evidence for the burial of our hoards therefore suggests a date between the mid-40s and the early 60s of the second century AD.

In addition to the above, we should also take into consideration that coins of Antoninus Pius from distant mints such as Magydos in Pamphylia and Rome would certainly have taken some time to travel to Macedonia. Furthermore, all three issues of the local mint in the name of this emperor had been produced at the time of the concealment of the hoards (Kremydi-Sicilianou 2004: 58–68). It therefore becomes evident that the hoards had probably accumulated and been concealed towards the middle or, perhaps, even the end of the reign of Antoninus Pius and we propose a date of c. AD 150–160 for their burial.

PSEUDOAUTONOMOUS ISSUES

The contents of the three Dion hoards provide a secure chronological framework for the dating of the pseudoautonomous issues included in these finds. The most abundant are the Diana/plow specimens from the local mint of Dion. The three hoards contain a total of 102 coins of this issue. In his monumental work on

2. The Dion 1999 hoard contains one coin of Amphipolis in the name of Marcus Aurelius with the legend ΟΥΗΡΟΣ ΚΑΙΣΑΡ issued during the reign of Antoninus Pius.

Macedonian coinage Gaebler (1926: 125–127), who knew of only one specimen of this issue in the British Museum, dated it to the reign of Augustus. His main argument was the type of the plow, which he believed to be restricted to foundation issues. This issue was discussed again by Grant (1946: 272–273) who, based on an erroneous description deriving from the evidence of the same coin, proposed its dating to the triumviral period, at the time when Quintus Hortensius Hortalus was governor of Macedonia (44/43 BC) and when, supposedly, a first foundation of the colony had occurred (Kremydi-Sicilianou 1998/9). This dating was tentatively accepted by the authors of *RPC* (*Suppl.* I, S-1503). In our mint study of the Dion coinage, a number of other pseudoautonomous issues from this mint were published, some of which also bore the plow (Kremydi-Sicilianou 1996: 253–256, issues III and VI, pl. 29 nos. 4, 24). With arguments which need not be repeated here in detail, a date in the second century was suggested for this issue (Kremydi-Sicilianou 1996: 79–85, 253–255). It is clear that the evidence of the new hoards confirms our proposal and secures a date under Antoninus Pius for the Diana / plow issue of Dion.

The evidence of the Dion hoards is also crucial for the dating of the very common Victoria / vexilla coins of Philippi. All eight coins of this mint in our hoards belong to these issues, which have been dated by Collart (1937: 232–233) to the reign of Augustus and have also been considered as foundation issues.³ This chronology, however, is not compatible with hoard evidence. In addition to the finds from Dion, two small burial hoards of the second century AD from Macedonia lead to the same conclusion. The first was unearthed at Ierissos in Chalkidike (Touratsoglou 1993: 60, no. 14) and the second comes from Amphipolis (*AEMTh* 12 [1998]: 78, 80–81). They both contain specimens of the Victoria / vexilla issues of Philippi together with second-century coins that date from Trajan to Antoninus Pius. We have recently argued elsewhere that the numerous pseudoautonomous coins of Philippi bearing these types probably belong to successive issues that range from the reign of Vespasian to that of Antoninus Pius or Commodus (Kremydi-Sicilianou 2002).

The chronology of the two Victory / shield issues of the Macedonian Koinon, four specimens of which, all in very good condition, were included in the Dion 1999 hoard, also needs to be reconsidered. They have been dated by Gaebler (1906: nos. 229–234, p. 11 for arguments) and the authors of *RPC* (I nos. 1619–1625, pp. 303–304 for arguments) to the first century for stylistic reasons and because of the legend MAKEΔONΩN on their reverse. Since KOINON MAKEΔONΩN is the standard form on issues bearing the imperial portrait after Vespasian, the abbrevi-

3. A date under Claudius has been proposed for this issue in a lucid article by Marcel Durry (1940), who argued correctly that the inscription *Victoria Augusta* could not have occurred earlier. The authors of *RPC* (I: 308) tentatively proposed a date under Claudius or Nero for this issue because of its metallic composition, whereas Gaebler (1935: nos. 14–15) had, quite prudently, dated it to “imperial times”.

ated legend has been considered as an indication of early date. But the pseudo-autonomous issues of the Koinon belong to a small denomination, probably the *hemiassarion*, and it is well known that inscriptions are often abbreviated on small coins.⁴ In our view the secure evidence of the hoards should prevail over such considerations and a second-century date should be accepted for these coins. The form of the letters on the numismatic legends can further contribute to their dating. Angular E's and Σ's were dominant on coin legends of issues of the Macedonian Koinon until the reign of Hadrian (Gaebler 1906: 76–81), whereas they were replaced by crescent-shaped forms from the reign of Pius (Gaebler 1906: 82–93). The lettering, as well as the very good preservation of these coins in our hoards, therefore, leads us to propose a date under Hadrian for their issue.

THE HOARDS AS EVIDENCE FOR COIN CIRCULATION

The very high representation of the latest issues in the three Dion hoards—the coins struck during the reign of Antoninus Pius form over 92% of the total—shows that we are dealing with currency that was withdrawn from circulation shortly before its concealment. In other words the three Dion hoards can be considered neither as “accumulation” nor as “savings” hoards; they probably reflect a more or less representative picture of the type of currency that circulated in the city around the middle of the second century AD. Comparison with stray finds of the same period would, of course, be important since it would help control the value of our assumption.⁵

The first, and most obvious, conclusion from the material presented above is that coinage from the local mint of Dion forms the large majority—over 91%—of the total currency in the hoards. The preponderance of local issues is also attested from other first- and second-century finds from Macedonia and shows that during this period coins hardly left their place of issue,⁶ and therefore everyday transactions in the cities were made with local coins. There are reasons to believe that this circulation pattern was altered during the third century AD. Both hoards and stray finds from Macedonia indicate that third-century coins traveled farther and consequently circulated more widely than second- or first-century issues, some-

4. Half-assaria of Dion are often inscribed COL DIENSIS (RPC I: no. 1503 and RPC Suppl. I: no. S-1507B, S-1508A) and of Philippi COL PHIL (RPC I: no. 1652), both omitting the epithets IVLIA and/or AVGVSTA, which are always found on the larger denominations. At Kassandreia even the title of the colony is omitted on the hemiassaria, whose legends read CAS(S)ANDRE[NSIS] (RPC I: no. 1512–1514).

5. The large majority of numismatic finds from Dion, over 15,000 coins, have been neither catalogued nor published and therefore such a comparison, for the time being, cannot be made.

6. Hoards of the first century are extremely rare from Macedonia. The very few that exist consist exclusively of local coins: coins of Amphipolis and the neighbouring Philippi are found in hoards from Amphipolis, whereas only coins of Thessalonike are encountered in one hoard from this area (Kremydi-Sicilianou forthcoming).

thing that should certainly be related to their metrological assimilation during this period (Kremydi-Sicilianou forthcoming).

The representation of coins from other Macedonian mints in the three Dion hoards is very low; there are no coins from the neighboring colonies, neither of Pella nor of Kassandreia, nor of the more distant municipium of Stobi. The only other Macedonian coins which are present in noticeable numbers derive from the mints of Thessalonike and the Macedonian Koinon. These are probably the mints with the largest production in the region—a factor that can probably account for their higher representation in the Dion as well as in other Macedonian hoards. The relatively low mobility of Macedonian coins of the first and second centuries AD is contrasted with the evidence of the late Hellenistic period. During the reigns of Philip V (220–179 BC) and Perseus (179–168 BC), the cities of Amphipolis, Pella, and Thessalonike were allowed to strike “autonomous coins” which circulated widely within Macedonia and were not restricted to the area of their issue (Touratsoglou 1993: 33, 47–55).

The second mint represented in the Dion hoards is that of the Thessalian League, with a total of 52 specimens (2.8%), all dated to the reign of Hadrian. The territory of the colony of Dion bordered with Thessaly, a region that had been incorporated into the province of Macedonia at the time of the concealment of the hoards.⁷ Coins from more distant areas are even rarer. Apart from the two specimens from Corinth in Achaia, three coins from Asia Minor were included in the finds: one from Magydos in Pamphylia, one from Tralleis in Lydia, and one from Ilion in Troas.

The presence of coins from Asia Minor in our hoards, although clearly exceptional, deserves a short comment. There is evidence that coins from Bithynia penetrated the regions of Macedonia and Thrace during the second and third centuries AD (Kremydi-Sicilianou 1996: 131 n. 2), and a considerable number of coins from Asia Minor are said to have been found at excavations in the area around Thessaloniki (Touratsoglou 1988: 17 n. 78). Stray finds from Thasos,⁸ Abdera (Chryssanthaki 2000: 815–821), and Pautalia (Grigorova 1993: 340) in Thrace also include a number of coins from the same province. Given the very restricted circulation of provincial bronzes, the sporadic presence of issues from Asia Minor in Macedonia and their more considerable presence in Thrace prove that there was movement of people from Asia Minor towards the Balkans, although neither the reason nor the scale of this movement can be deduced from coin circulation.⁹

7. The date of the incorporation of Thessaly into the province of Macedonia is fully discussed by Bowersock (1965), who gathers all available epigraphic and literary evidence and tentatively proposes a date under Nero. Papazoglou (1979: 329–330) accepts the more conventional mid-second-century AD date.

8. Many thanks are due to Julien Fournier for his information that 81 out of 368 “foreign” coins of the imperial period from Thasos derive from mints of Asia Minor.

9. Close relations and contacts between Asia Minor and Macedonia in imperial times can also be traced through epigraphic and archaeological evidence. Epigraphic research on

The presence of Roman bronzes, mainly sestertii and dupondii, in these finds also calls for some comment. Roman currency had been circulating in Macedonia since the years of the late Republic, and both denarii and antoniniani are often encountered in Macedonian hoards, either alone or mixed with local issues (Touratsoglou 1993: 35, 38, Table 2b). Roman imperial bronzes, on the other hand, although occasionally encountered as stray finds, have never before been attested in a hoard context. In this sense the evidence from Macedonia differs substantially from that of Achaia or Crete; in these provinces hoards consisting of imperial bronzes, mostly sestertii and dupondii, are often found (Touratsoglou and Sideropoulos 2000), and the reason for their absence from Macedonia, if not random, deserves further research.

INTERPRETATION OF THE HOARDS

It has already been mentioned that the three finds were buried in clay pots inside the same room, that their composition was very similar, and that their only substantial difference was their size (1,590, 129, and 81 coins respectively). The first question which therefore arises is whether we are dealing with three different hoards, or whether it would be possible to suggest that all the coins belonged to one and the same find separated into three different containers. Multiple concealments¹⁰ with an identical context are not very frequent and are usually understood as being part of a single ensemble (Callu 1979: 5, for a list of examples). This is very probable for our hoards and in this case we could suppose that their separation was due to practical reasons such as the size of the available pots.¹¹ However, one cannot completely rule out the possibility that the hoards were accumulated and buried separately within a short time period.

In order to obtain a better understanding of the material under discussion we consider it necessary to compare the Dion hoards to the rest of the known Roman provincial hoards from the region. The large majority of hoards from Macedonia date to the third century AD and are clearly “emergency” hoards, in other words private holdings that were hidden and lost by individuals during the period of

onomastics has shown, for example, that people of Italian origin traveled a lot from Asia Minor to Macedonia (Salomies 1996: 124–127), whereas other archaeological evidence has revealed common characteristics in the form of the sepulchral monuments, funerary inscriptions, and burial customs between Macedonia, Thrace, and Asia Minor (Rizakis and Touratsoglou 2000).

10. The term “multiple concealments” (*cachettes monétaires multiples*) has been used by Callu (1979) in an article that focused mainly on finds that were buried simultaneously but contained issues of different species (metal and/or denomination) and where the reason for their separation is discussed.

11. Unfortunately two of the three pots disintegrated during the excavation process and it is not possible to determine whether there was any space for more coins within them. The third pot (that of the Dion 2000 hoard) was much better preserved and it can be stated that it was full with coins to the top.

the invasions (Kremydi-Sicilianou 1996b). The Dion hoards do not belong to this category since the date of their burial, just after the middle of the second century AD, coincides with a peaceful period which is not characterized by invasions or wars.¹² All other second-century hoards that have been recorded from Macedonia derive from burials. The total of 1,800 coins in the hoards is also exceptional; “emergency” hoards usually contain between 20 and 150 specimens, whereas “burial” hoards are substantially smaller, with only a very small number of coins (Kremydi-Sicilianou forthcoming). Estimated in denarii the sum represented was nominally equivalent to about 113 denarii, expressed in coins of small value (Kremydi-Sicilianou 2004: 37).

The secure archaeological context in which the hoards were discovered is crucial for their interpretation. We have already mentioned that the Roman theater, next to which the hoards were concealed, was situated in the area of the sanctuary of Zeus Olympios. All the sanctuaries at Dion, as well as the Hellenistic and Roman theaters and the stadium, were situated in a large district to the south of the city walls. This was certainly a public area of the Hellenistic city and it retained this function during the Roman period. Our hoards therefore contain an unusually large number of bronze coins, mostly provincial, that were concealed within a public area and, specifically, inside a building situated very close to the Roman theater. The hoards date to a period when the theater was certainly in use and cannot be related to the destruction or abandonment of this important public building, as in the case of a fourth-century AD hoard which was discovered in the Roman theater at Stobi (Vinčić and Hadži-Maneva 2000). The function of the subsidiary building in which the Dion hoards were concealed cannot be determined with certainty, but it seems very plausible to suppose that it must have been related to the theater. If this is correct then the currency in the hoards represented moderate, but nevertheless public, revenues that would be handled by someone holding an official post.

It would also be possible to suppose that the hoards could be related to some private enterprise that functioned in the area. Fairs, for example, were certainly held near sanctuaries, and other permanent enterprises such as stores, inns, or restaurants could have operated nearby. These, of course, are hypothetical suggestions and there is no secure archaeological evidence to support them. To summarize, therefore, the only thing we can state with some degree of certainty is that the hoards must have represented revenues deriving from public or private enterprises held in the area. The proximity of the edifice in which they were buried to the Roman theater leads us to believe that the most probable hypothesis is that the hoards

12. The possibility that the Dion hoards should be connected with the invasions of the Kostobokoi seems highly improbable, since these occurred in 170/1 AD and hoards connected with these events always contain coins of Marcus Aurelius (Kremydi-Sicilianou 2004: 42–43).

should be related to that building's function and perhaps represent revenues such as entrance fees.

The reason the money was retired from circulation, and especially the cause for its abandonment and subsequent loss, remain somewhat obscure. A closer inspection of the monetary production of the mint of Dion, however, seems to offer some clues toward answering our questions. The mint of Dion had produced coins of two denominations—*assaria* and half *assaria*—since the reign of Augustus. The *assarion* weighed between 7 and 9 grams (21–22 mm diameter) under the Julio-Claudians and was gradually reduced to c. 4.9 grams (19 mm diameter) during the reign of Antoninus Pius. A reaction to this reduction in size and weight can be traced during the reign of Marcus Aurelius, when a new, larger denomination was introduced and the *assarion* regained some of its previous losses; the new coin, the *diassarion*, weighed over 10 grams (24 mm diameter), whereas the weight of the *assarion* was re-adjusted to c. 6 grams (22 mm diameter) (Kremydi-Sicilianou 1996: 121–123, 283–284). The currency in our hoards, therefore, represents money which was struck by the local mint just before the application of a monetary reform, together with a much smaller percentage of “foreign” currency. The chronological proximity of the concealment of the hoards and the establishment of the monetary reform is a fact that needs to be looked into.

The first possibility is that the two facts are not related; the money was deposited inside the building in order to be re-used, but due to some “accidental” factor it was never recovered. The monetary reform came a few years later and had nothing to do with the loss of the coins. The second hypothesis would be that the currency was driven out of circulation because it was no longer valid. The new coins had already been struck and the old ones had to be withdrawn because their co-existence with the new denominations would cause confusion in the market; together with the “old” local currency, the “foreign” coins were also withdrawn because they were not legal tender. However, even in this case, one would expect the “old” coins to be exchanged and not abandoned.

In either of these cases, however, the loss of the coins must have been due to some accidental circumstance, and a natural disaster seems to be the most probable explanation. The only such event for which there seems to be some evidence would be a flood. During the excavation of the nearby theater a thick layer of pebbles was discovered covering the orchestra, definite evidence that the area had been flooded (Palaiokrassa 1985: 55). The city of Dion, situated on the plain below steep Mount Olympos, had always suffered from the rushing torrents that flowed down the mountain during the rainy seasons, and in fact such disasters sometimes still occur. It was perhaps after such a flood that the building was covered and the hoards inside it were lost.

KEY TO PLATES

Figure references are to the detailed publication of these hoards (Kremydi-Sicilianou 2004), where full descriptions and references can be found.

Plate 20

Dion

1. Domitian r. / Athena. Assarion. 10.1 g, 6:00. Dion 1999 hoard, fig. 3i.
2. Trajan r. / Athena. Assarion. 8.9 g, 7:00. Dion 1999 hoard, fig. 4.
3. Trajan l. / Athena. Assarion. 6.9 g, 6:00. Dion 1999 hoard, fig. 5.
4. Hadrian r. / Athena. Assarion. 6.2 g, 12:00. O1-R3. Dion 1999 hoard, fig. 12.
5. As above. 4.3 g, 6:00. O3-R9. Dion 1999 hoard, fig. 17.
6. Antoninus Pius r. / Athena. Assarion. 5.9 g, 6:00. O1-R1. Dion 1999 hoard, fig. 18.
7. As above. 6.8 g, 6:00. O2-R3. Dion 1999 hoard, fig. 19.
8. As above. 4.5 g, 1:00. O3-R10. Dion 1999 hoard, fig. 26.
9. As above. 5.5 g, 12:00. O3-R11. Dion 1999 hoard, fig. 27.
10. Antoninus Pius r. / Zeus. Assarion. 6.3 g, 7:00. O3-R15. Dion 1999 hoard, fig. 31.
11. Antoninus Pius r. / Athena. Assarion. 6 g, 6:00. O4-R20. Dion 1999 hoard, fig. 36.
12. As above. 4.6 g, 12:00. O7-R40. Dion 1999 hoard, fig. 69.

Plate 21

Dion

13. As above. 7.8 g, 7:00. O3-R14. Dion 2000 hoard, fig. 143.
14. As above. 4.7 g, 6:00. O3-R20. Dion 2000 hoard, fig. 147.
15. Antoninus Pius r. / Zeus. Assarion. 5.6 g, 6 :00. O4-R44. Dion 2000 hoard, fig. 165.
16. Diana Baphyria r. / plow. Half assarion. 2.1 g, 9:00. O1-R1. Dion 1999 hoard, fig. 78.
17. As above. 2 g, 12:00. O2-R2. Dion 1999 hoard, fig. 79.
18. As above. 3 g, 10:00. O3-R3. Dion 2000 hoard, fig. 169.
19. As above. 2.7 g, 9:00. O4-R4. Dion 2000 hoard, fig. 170.
20. As above. 2 g, 9:00. O4-R5. Dion 2000 hoard, fig. 171.
21. As above. 3.7 g, 6:00. O4-R2. Dion 2000 hoard, fig. 172.

Macedonian Koinon

22. Hadrian r. / winged thunderbolt. Double assarion. 15.4 g, 1:00. Dion 1999 hoard, fig. 94.

- 23. Hadrian r. / Macedonian shield. Assarion. 7.3 g, 9:00. Dion 1999 hoard, fig. 96.
- 24. Antoninus Pius r. / winged thunderbolt. Double assarion. 12.7 g, 7:00. Dion 1999 hoard, fig. 97.
- 25. Nike l. / Macedonian shield. Half assarion. 3.2 g, 7:00. Dion 1999 hoard, fig. 100.

Plate 22

Macedonian Koinon

- 26. Nike r. / Macedonian shield. Half assarion. 2.5 g, 12:00. Dion 1999 hoard, fig. 101.

Thessalonike

- 27. Trajan r. / Ethnic. Assarion. 7.4 g, 7:00. Dion 2000 hoard, fig. 173.
- 28. Horse r. / Ethnic. Half assarion. 2.6 g, 1:00. Dion 2000 hoard, fig. 174.
- 29. Head of Tyche r. / Kabeiros. Assarion. 9.1 g, 7:00. Dion 1999 hoard, fig. 90.

Philippi

- 30. Victoria l. / three vexilla. Half assarion. 4.7 g, 6:00. Dion 1999 hoard, fig. 102.
- 31. Victoria l. / three vexilla. Half assarion. 4.4 g, 5:00. Dion 1999 hoard, fig. 103.

Edessa

- 32. Hadrian r. / Tyche. Assarion. 6.1 g, 6:00. Dion 1999 hoard, fig. 85.

Amphipolis

- 33. Marcus Aurelius as Caesar r. / Artemis Tauropolos. Assarion. 4.8 g, 6:00. Dion 1999 hoard, fig. 84.

Thessalian Koinon

- 34. Hadrian r. / Athena Itonia. Assarion. 6.4 g, 6:00. Dion 1999 hoard, fig. 106.
- 35. Hadrian r. / Athena Itonia. Assarion. 4.7 g, 6:00. Dion 1999 hoard, fig. 110.

Corinth

- 36. Hadrian r. / Aphrodite? Assarion. 6.6 g, 2:00. Dion 1999 hoard, fig. 104.

Tralles, Lydia

- 37. Nike l. / eagle. Half assarion. 2.5 g, 5:00. Dion 1999 hoard, fig. 112.

Magydos, Pamphylia

- 38. Antoninus Pius r. / Athena. Assarion. 5.3 g, 7:00. Dion 1999 hoard, fig. 113.

Plate 23

Ilion, Troas

39. Hadrian r. / Athena. Assarion. 6.8 g, 12:00. Dion 2000 hoard, fig. 178.

Uncertain Greek mint

40. Faustina Major r. / Galerius Antoninus r. Small fragment of a sestertius. 12:00. Dion 1999 hoard, fig. 114.

Rome

41. Hadrian r. / Annona. Sestertius. 24.5 g, 6:00. Dion 1999 hoard, fig. 120.
 42. Hadrian r. / Hadrian and Gallia. Dupondius/as. 12.7 g, 6:00. Dion 1999 hoard, fig. 124.
 43. Hadrian r. / Dacia seated on rock. Dupondius/as. 14.2 g, 12:00, Dion 1999 hoard, fig. 126.
 44. Antoninus Pius r. / Romulus advancing r. Dupondius/as. 11.3 g, 12:00, Dion 1999 hoard, fig. 128.

REFERENCES

- AEMTh = *Archeologiko Ergo sti Makedonia kai Thrake*.
 Amandry, M. 1993. *Coinage production and monetary circulation in Roman Cyprus*. Nikosia: Bank of Cyprus Cultural Foundation.
 Bellinger, A. R. 1961. *Troy, the coins*. Suppl. Monograph 2. Princeton: Published for the University of Cincinnati by Princeton University Press.
 Bowersock, G. W. 1965. Zur Geschichte des römische Thessaliens. *Rheinisches Museum für Philologie* 108: 282–298.
 Burrer, Fr. 1993. *Münzprägung und Geschichte des thessalischen Bundes in der römischen Kaiserzeit bis auf Hadrian (31 v. Chr.–138 n. Chr.)*. Saarbrücker Studien zur Archäologie und alten Geschichte. Saarbrücken: Saarbrücker Druckerei.
 Callu, J.-P. 1979. Cachettes monétaires multiples (IIIe–IVe siècles.). In: M. Alföldi, ed., *Studien und Fundmünzen der Antike*, vol. 1, pp. 5–16. Berlin.
 Chryssanthaki, K. 2000. *L'histoire monétaire d'Abdère du VIe avant J.-C. au IIe siècle après J.-C.* Thèse de doctorat, Université Paris IV–Sorbonne.
 Collart, P. 1937. *Philippe, ville de Macédoine*. Travaux et mémoires des anciens membres étrangers de l'Ecole et de divers savants, Ecole française d'Athènes, 5. Paris : de Boccard.
 Durry, M. 1940. Sur une monnaie de Philippe. *Revue des Etudes Anciennes* [1940]: 412–416.
 Fritze von, H. 1902. Die Münzen von Ilion. In: W. Dörpfeld, ed., *Troja und Ilion: Ergebnisse der Ausgrabungen in der vorhistorischen und historischen Schichten von Ilion 1870–1894*. Athens: Beck and Barth.
 Gaebler, H. 1906. *Die antiken Münzen Nord-Griechenlands*, vol. 3. 1. Berlin: Georg Reimer.

- . 1935. *Die antiken Münzen Nord-Griechenlands*, vol. 3. 2. Berlin: Walter de Gruyter.
- Grant, M. 1946. *From imperium to auctoritas: a historical study of aes coinage in the Roman Empire*. Cambridge: Cambridge University Press.
- Grigorova, V. 1993. Economic relations of Pautalia and its territory in the 2nd–3rd century (after numismatic data). In: T. Hackens and Gh. Moucharte, eds., *Actes du 11e Congrès International de Numismatique, organisé à l'occasion du 150e anniversaire de la Société Royale de Numismatique de Belgique, Bruxelles, 8–13 septembre 1991*, pp. 337–342. Louvain-la-Neuve: Séminaire de Numismatique Marcel Hoc.
- Kremydi-Sicilianou, S. 1996a. *Η Νομισματοκοπία της Ρωμαϊκής αποικίας του Δίου*. Biblioteca of the Hellenic Numismatic Society 4. Athens: Hellenic Numismatic Society.
- . 1996b. Απόκρυψη θησαυρών έκτακτης ανάγκης. Με αφορμή ένα Μακεδονικό θησαυρό του 3ου μ.Χ. αι. In: *Χαρακτήρ. Αφιέρωμα στη Μάντω Οικονομίδου*, pp. 123–146. Athens: Ταμείο Αρχαιολογικών Πόρων και Δημοσιευμάτων.
- . 1998/9. Quintus Hortensius Hortalus in Macedonia (44–42 BC). *Τεκμήρια* 4: 61–76.
- . 2002. *Victoria Augusta* on Macedonian coins: remarks on dating and interpretation. *Τεκμήρια* 7: 63–84, pl. 1.
- . 2004. *Multiple concealments from the sanctuary of Zeus Olympios at Dion (Macedonia): three Roman provincial coin hoards*. Μελετήματα 35. Athens: National Hellenic Research Foundation. Centre for Greek and Roman Antiquity.
- . Forthcoming. Patterns of monetary circulation in Roman Macedonia: The hoard evidence. *Eylimene* 5.
- Lanz 2001. *Münzen von Korinth, Sammlung BCD*. Numismatic Lanz München. Auktion 105. November 2001.
- Mari, M. 1998. Le Olympie macedoni di Dion tra Archelao e l'età romana. *Rivista di filologia e d'istruzione classica* 126: 137–169.
- . 2002. *Al di là dell'Olimpo. Macedoni e grandi santuari della Grecia dall'età arcaica al primo ellenismo*. Meletemata 34. Athens: National Hellenic Research Foundation, Center for Greek and Roman Antiquity.
- Moretti, L. 1953. *Iscrizioni agonistiche greche*. Studi pubblicati dall'istituto italiano per la storia antica 12. Roma: A. Signorelli.
- Overbeck, B. von. 1971. M. Galerius Antoninus. Bemerkungen zu einer Fundmünzen aus Mangolding, Ldkr. Regensburg. *Bayerische Vorgeschichtsblätter* 16: 245–257, pls 25–27.
- Palaiokrassa, L. 1985. Το ρωμαϊκό θέατρο του Δίου. Οι αρχαιολόγοι μιλούν για την Πιερία, Ιούλιος–Αύγουστος 1984. Thessalonike: Prefecture of Pieria.

- Pandermalis, D. 1999. *Dion. The discovery*. Athens: Adam editions.
- Papaefthymiou, E. 2002. *Édessa de Macédoine. Étude historique et numismatique*. Biblioteca of the Hellenic Numismatic Society 7. Athens: Hellenic Numismatic Society.
- Papazoglou, F. 1979. Quelques aspects de l'histoire de la province de Macédoine. In: H. Temporini and W. Haase, eds, *Aufstieg und Niedergang der römischen Welt II*, vol. 7, 1, pp. 302–369. Berlin and New York: Walter de Gruyter.
- . 1988. *Les villes de Macédoine à l'époque romaine*. Bulletin de Correspondance Hellénique, Supplément 16. Athènes : Ecole française d'Athènes.
- Rizakis, A. and I. Touratsoglou. 2000. Mors Macedonica. Ο θάνατος στα επιτάφια μνημεία της Άνω Μακεδονίας. *Archaiologike Ephemeris* 139: 237–281.
- Robinson, D. M. 1938. Inscriptions from Macedonia. *Transactions and Proceedings of the American Philological Association* 69 : 43–76, pls. 1–37.
- Salomies, O. 1996. Contacts between Italy, Macedonia and Asia Minor during the Principate. In: A. D. Rizakis, ed., *Roman onomastics in the Greek East: social and political aspects. Proceedings of the international colloquium on Roman onomastics, Athens, 7–9 September 1993*. Μελετήματα 21. Athens: National Hellenic Research Foundation. Centre for Greek and Roman Antiquity, pp. 111–127.
- Touratsoglou, I. 1988. *Die Münzstätte von Thessaloniki in der römischen Kaiserzeit*. Berlin and New York: de Gruyter.
- . 1993. *The coin circulation in ancient Macedonia (c. 200 BC–AD 168–86). The hoard evidence*. Biblioteca of the Hellenic Numismatic Society 1. Athens: Hellenic Numismatic Society.
- and Kl. Sideropoulos. 2000. Οι νομισματικοί θησαυροί της Ρωμαϊκής Κρήτης: Μια πρώτη προσέγγιση. *Πεπραγμένα Η Διεθνούς Κρητολογικού Συνεδρίου*, vol. A3, pp. 287–296. Herakleion: Εταιρία Κρητικών Ιστορικών Μελετών.
- Vinčić, Z. and M. Hadži-Maneva. 2000. Hoard of bronze Roman coins from the Stobi antique theater. *Macedonian Numismatic Journal* 4: 55–76.

New Data on Monetary Circulation in Medieval Andūkān and Shelji: Coins from the Andizhanskoe and Kirovskoe *Vodokhranilishche*

PLATES 24–27

MICHAEL FEDOROV*

Collections of stray finds from two Central Asian sites, Andukan in Uzbekistan and Shelji in the Kyrgyz Republic, are presented as evidence for the overall pattern of coin use and circulation at these locations. In both locations there was a peak in coin use in the eleventh century under the Qarakhanids; at Shelji there was a second peak under the Timurids, but this latter reflected the massive production of low-value copper coinage during that period rather than a boom in the local economy.

This article is based on collections of stray monetary finds made on the sites of the ancient towns of Andūkān (Uzbekistan) and Shelji (Kyrgyz Republic) in locations partly submerged now by the Andizhanskoe and Kirovskoe *vodokhranilishche* (i.e., reservoirs). There was also one small hoard (eleven coins) found at Shelji.

The stray coins, as well as hoards, found at the sites of ancient towns are an important and indispensable source of information on the monetary circulation in those towns. The stray finds and hoards complement each other. A hoard, being a snapshot of monetary circulation at the time when it was hidden, gives a more exact and exhaustive picture but only for a short period. Stray finds cover a broader chronological period and allow us to trace common trends and changes in circulation, composition of the monetary mass, and so on. Both the hoards and the stray finds provide information about the trade contacts of the town examined with other towns and countries. The analysis of the monetary mass allows one to

* Humboldtstrasse 20, D-98693 Ilmenau, Germany.

establish when a town was thriving (intensive monetary circulation, numerous finds) and when it went into a decline.

Many Central Asian Islamic coins, especially those of the Qarakhanids, mention several names and/or titles, reflecting a hierarchy of authority. These mentions, combined with the dates on the coins, provide extremely important historical evidence for both the political structure and the details of political events. Full and careful description is necessary for comparison, since changes are best pinpointed by finding different combinations within the same year.

The disposition of titles and names on the coins followed some rules that allow one to decipher the hierarchy represented. The suzerain, or independent overlord, was mentioned on the reverse after the honorific mention of the caliph, the spiritual head of the Muslim world. After the suzerain, the vassal was mentioned. A subvassal was usually mentioned on the obverse. Sometimes both vassal and subvassal were placed on the obverse—in this case the vassal was mentioned above the *kalima* and the subvassal below the *kalima*. Sometimes a vassal or subvassal would be mentioned both above and below the *kalima*. If a town belonged directly to the suzerain, only his title would appear, on both reverse and obverse.

In the circular legend, after the formula *ما امر به* (“from he who ordered”), the direct ruler of the town who had the prerogative of minting there was mentioned. This could be either the suzerain or a vassal. Sometimes a mint official was also mentioned on the coins, usually after the formula *على يدي* (“under the supervision of”).

ANDŪKĀN

Andūkān (اندوكان), a medieval town in the Farghāna valley, was mentioned by the Arab geographers as early as the tenth century. It was situated about 10 kilometers south of the Kara Daria (a southern tributary of the Syr Daria), in the central part of the Fergana valley, about 45 kilometers northwest of Osh (medieval Ush) and about 63 kilometers northeast of Marghelan (medieval Marghīnān). The Mongol invasion and the following wars between the descendants of Chingiz Khān resulted in the devastation of many Central Asian towns; some ceased to exist. Among them was Andukān. But in the time of Duva Khan (1291–1306), the town was rebuilt and repopulated. It was called henceforth Andigān or Andijān (اندجان or اندکان). After the conquest of Central Asia by Russia Andizhan was a *uezdnyi gorod* (administrative center of a *uezd*, district) in the Ferganskaia oblast’ of the Turkestan general-governorate (Bartold 1965a: 326). Then it became administrative center of the Andizhanskaia oblast’ in the Uzbek Republic.

Not far from Andizhan is the Andizhanskoe *vodokhranilishche* (Andizhan reservoir). The water stored there is intensively used to irrigate cotton fields in adjacent areas so, much depleted by autumn each year, the basin grows shallow.

As the water retreats and the bottom is exposed, archaeological artifacts are often found in quantity. In the autumn of 2002 one man scanned the place with a mine detector and found thirty-three medieval copper coins. In 2003 these coins were acquired by the Bishkek antiquary A. Kamyshev, who sent me scans of them so that I could identify them for him. Later he sent me five coins found there in 2004. The corpus of coins, though not voluminous, proved to be very interesting since it includes some quite rare coins which were heretofore unknown. Apart from everything else it provides valuable information about monetary circulation in medieval Andūkān and the adjacent area in the tenth to thirteenth centuries. The study of such monetary complexes has proved to be fruitful (Fedorov 2001c), so I decided to study it and to write an article about it.

Catalogue

1. Uzgend, 312/924–25: 2.25 g, 24 mm. Plate 24.

Obv.: Within a circle, لا اله الا الله وحده / لا شريك له / ملك

Circular legend: بسم الله ضرب هذا الفلاس باوزقند سنة اثنا و عشر و ثلثمائه

Rev.: Within a beaded circle, الله / محمد / رسول / الله / نصر

Circular legend: ما امر به الامير نصر بن احمد عزه الله

The earliest coin of Uzgend. The mintname is written with the letter ق (q) as in Samarqand. Later it was written اوزكند (Uzgend) or اوزجند (Uzjend). The coin mentions the Samanid Naṣr b. Aḥmad and his vassal Malik. This Malik was mentioned in 320/932 as a vassal of Naṣr b. Aḥmad on coins of Akhsiket. On coins of Naṣrābād in 335–344/946–956 he was mentioned (with his full name Malik b. Sh.k.r Tegin) as a vassal of the Samanid Nūḥ b. Naṣr (Kochnev 1984: 196–201). So this Malik was a Turkic aristocrat, son of Tegin (“prince”) Sh.k.r, who came to serve the Samanids. Judging by the fact that he appeared first in Uzgend, it was his hereditary domain. The geographer Ibn Khordādbēh (c. 885) wrote that Uzgend belonged to the Turkic aristocrat Chūr Tegin (Bartold 1963b: 213). Most probably Sh.k.r Tegin and his son Malik belonged to the same family. Together with Malik, Naṣrābād coins mentioned his son Bakr b. Malik, who served the Samanids and achieved one of the highest posts in their state: he was appointed vicegerent of Khorasan in August 954. In December 956, though, he was murdered by conspirators, probably with the silent connivance of the Samanid amir ‘Abd al-Malik b. Nūḥ (Bartold 1963b: 309–310).

2. Farghāna, 358/968–69: 3.3 g, 27.5 mm.

Obv.: Within a beaded circle, لا اله الا الله وحده / لا شريك له

Outer circular legend: بسم الله ضرب هذا الفلاس بفرغانه قلع الحاجب و الخليفة احمد بن على

Inner circular legend: على يدي ابي نصر الضراب سنة ثمان خمسين و ثلاثمائة
 Rev.: Within a beaded circle, لله / محمد / رسول / الله / الملك المظفر / منصور بن نوح

Circular legend: ما امر به الأمير احمد بن منصور مولى امير المؤمنين

This coin shows a complicated hierarchy: the Samanid amir Maṣṣūr b. Nūḥ (suzerain), Aḥmad b. Maṣṣūr (vassal, son of Maṣṣūr b. Nūḥ?), Qlich al-Ḥājib (subvassal, judging by his name a Turk, and judging by the title *ḥājib* a general or high official), Aḥmad b. ‘Alī (governor). The coin also mentions the mint official Abū Naṣr *al-ḍarrab* (“minter”). So Maṣṣūr b. Nūḥ granted Ferghāna (as a feudal appanage) to his vassal Aḥmad b. Maṣṣūr. Part of the feudal rights (and taxes from Ferghāna) were granted to a subvassal, Qlich al-Ḥājib. They served the Samanid amir in Bukhārā (or elsewhere), while in Ferghāna was the vicegerent Aḥmad b. ‘Alī, who governed it in the name of his superiors.

3. Farghāna, 358/968–69: 2.87 g, 29 mm. Plate 24.

Obv.: Within a beaded circle, لا اله الا / الله وحده / لا شريك له

Outer circular legend: بسم الله ضرب هذا الفلاس بفرغانه قلج الحاجب و الخليفة احمد بن على

Inner circular legend: على يدي عبد الله النسفي (?) سنة ثمان خمسين و ثلاثمائة

Rev.: Within a beaded circle, لله / محمد / رسول / الله / المظفر / منصور بن نوح

Circular legend: ما امر به الأمير احمد بن منصور مولى امير المؤمنين

This coin has the same feudal hierarchy of names but a different mint official: ‘Abd Allāh al-Nesefi (?).

4. Farghāna, 359/969–70: 3.5 g, 28 mm. Plate 24.

Obv.: Within a beaded circle, لا اله الا / الله وحده لا / شريك له قلج / الحاجب و احمد بن على

Circular legend: بسم الله ضرب هذا الفلاس بفرغانه سنة تسع و خمسين و ثلاثمائة

Rev.: Within a beaded circle, لله / محمد / رسول / الله / الملك المظفر / منصور بن نوح

Circular legend: ما امر به الأمير احمد بن منصور مولى امير المؤمنين

The same hierarchy is reflected here, but the outer circular legend is absent and the disposition of legends is different. The mint official mentioned is Masrūr b. Anas.

5. Farghāna, 359/969–70: 2.9 g, 27 mm.

Obv.: Within a square, two words محمد crossing one another so that they make a cross. Around the sides, forming a square, لا اله الا / الله وحده / لا شريك له قلج / الحاجب و احمد على

Circular legend: بسم الله ضربهذا الفلاس بفرغانه في سنة تسع و خمسين و
ثلثمائة

Rev.: Within linear and beaded circle, / رسول الله / الملك المظفر /
منصور بن نوح

Circular legend: ما امر به الأمير...نصور مولى امير المؤمنين ...

The same hierarchy is reflected here, but the outer circular legend is absent and the disposition of legends is different. No mint official is mentioned.

6. Farghāna, 367/977–78: 2.3 g, 2.65 mm. Plate 24.

Obv.: Circle with dot in the middle inscribed in a hexagram (six-pointed star); the hexagram is inscribed in a square. Around the sides of the square,
لا اله الا / الله وحده / لا شريك له / احمد بن على

Circular legend: بسم الله ضربهذا الفلاس بفرغانه سنة سبع و ستين و ثلثمائة

Rev.: Within a beaded circle, / رسول الله / نوح بن منصور / تاش
الحاجب

Circular legend: ما امر به الأمير احمد بن منصور مولى امير المؤمنين

This coin mentions the Samanid amir Nūḥ b. Maṣṣūr (suzerain), Aḥmad b. Maṣṣūr (vassal), Tāsh al-Ḥājib (subvassal), and Aḥmad b. ‘Alī (governor). Like many Turkan generals Ḥājib Tāsh was at first a *ghulam* (slave trained as a professional warrior) and palace guard. He had a brilliant career, achieving the post of vicegerent of Khorasan (Bartold 1963b: 312–314).

7. Farghāna, 387/997: 3.05 g, 27.5 mm.

Obv.: Beaded circle inscribed in beaded triangle. Within the circle, خان. On the sides of the triangle, لا اله الا / الله وحده / لا شريك له. All that within a beaded circle.

Circular legend: بسم الله ضربهذا الفلاس بفرغانه سنة سبع و ثمانين و [sic] ثلثمائة

Rev.: Within a border of three circles (linear-beaded-linear), / رسول الله / محمد /
تكين / الجليل

Circular legend: ما امر به الأمير الجليل المؤيد العدل و لى (الحق) طغان

This coin was minted by the Qarākhānid Tegin al-Jalīl (Naṣr b. ‘Alī), citing Khān (Aḥmad b. ‘Alī, brother of Naṣr) as suzerain. In 382/992, the Qarākhānid Boghrā Khān Hārūn conquered the Samanid capital, Bukhārā, but fell ill and died on the way to Balāsāghūn, his own capital. After his death Qarākhānid expansion to the west was headed by Naṣr b. ‘Alī, who conquered Farghāna from the Samanids no later than 383/993–94. Having conquered Farghāna, he made Uzgend his capital. On many copper coins minted in Uzgend the mintname was Farghāna, meaning the whole province. This occurred mainly on coins minted in his reign (the dates

384–391, 393, 394?, 396–402 AH are known). After his death only eight years are known when the mintname Farghāna was placed on coins: AH 410, 411, 413, 416, 421, 418, 431, and once around the beginning of the twelfth century (Fedorov 2000: 10, 46).

8. Farghāna, (38)8/998: 2.9 g, 27 mm.

Obv.: Within a beaded circle, خان. On the sides of the circle the *kalima* is written in such a way that it forms a triangle, لا اله الا / الله وحده / لا شريك له. All that is within a linear circle.

Circular legend: [sic] بسم الله ضرب هذا الفلاس بفرغانه سنة ثمان

Rev.: Within a border of two circles (linear and beaded), الله / محمد / رسول / الله / ايلك / الجليل

Circular legend: بما امر به الامير الجليل المؤيد العدل ابو الحسن مولى امير المؤمنين

This coin was minted by the Qarākhānid Ilek al-Jalil Abū al-Ḥasan (i.e., Naṣr b. ‘Alī), mentioning Khān (Aḥmad b. ‘Alī, brother of Naṣr) as suzerain. *Ilek* is new and higher title for Naṣr b. ‘Alī compared to the previous year.

9. Uzgend, (38)9/999: 2.2 g, 27 mm.

Obv.: Within a beaded circle, خان. On the sides of the circle is the *kalima*, written in such way that it forms a triangle, لا اله الا / الله وحده / لا شريك له. All that within a linear circle.

Circular legend: [sic] بسم الله ضرب هذا الفلاس باوزكند سنة تسع

Rev.: Within a border of two circles (linear and beaded), الله / محمد / رسول / الله / ايلك / الجليل

Circular legend: [sic] بما امر به الامير الجليل المؤيد العدل نصر بن علي

This coin was minted by the Qarākhānid Mu‘ayyid al-‘Adl Ilek al-Jalil. On the coin there is the name Naṣr b. ‘Alī, mentioning Khān (Aḥmad b. ‘Alī, brother of Naṣr) as suzerain.

10. (Akhsiket?), 394 / 1003–04: 1.65 g, 23 mm.

Obv.: Within a small beaded circle, نصر. The *kalima* forms a triangle on the sides of the beaded circle, لا اله الا / الله وحده / لا شريك له. All that is within a large beaded circle.

Circular legend: بسم الله ضرب هذا الفلاس (باخسبكت) سنة اربع و تسعين و ثلثمائة

Rev.: Within a beaded circle, الله / محمد / رسول الله / الخان العادل

Circular legend: ...الهدى و دين الحق ليظهره ... (Qur‘an 9.33).

This coin was minted by Naṣr (b. ‘Alī), mentioning al-Khān al-Jalil (Aḥmad b. ‘Alī) as suzerain.

11. No date and mintname, Qarakhanid Naṣr b. ‘Alī: 3.65 g, 29 mm.

Obv.: Within a border of four circles (one linear, three beaded), لا اله الا / الله / الله / لا شريك له

Rev.: Within a circle, الله / محمد / رسول الله

Circular legend: ما امر به الأمير نصر بن عل [sic] مولى امير المؤمنين. This coin was minted (not later than 403/1012) by Naṣr b. 'Al(i), mentioning no suzerain.

12. Ilāq, 395 / 1004–05: 2.85 g, 28 mm. Plate 24.

Obv.: Within a beaded circle, الله / محمد / رسول الله. Around it, لا اله الا الله وحده لا شريك له

Circular legend: بسم الله ضربهذا الفلاس بايلاق سنة خمس و تسعين و ثلثمائة

Rev.: Square inscribed in circle. Within the square, بن / محمد / بن دهقان الجليل / منصور

Circular legend: ما امر به الأمير الجليل احمد بن على يده الله

This coin was minted by Muḥammad b. Maṣṣūr, the second representative of the semi-independent dynasty of Dihqāns of Ilāq. Muḥammad b. Maṣṣūr cites the Qarākhānid Aḥmad b. 'Alī as suzerain.

13. Farghāna, 396 / 1005–06: 2.5 g, 28 mm. Plate 24.

Obv.: Within a beaded circle, لا اله الا الله وحده / لا شريك له

Outer circular legend: لله الامر من قبل و من بعد و يومئذ يفرح المؤمنون بنصر الله (Qur'an 30.3–4).

Inner circular legend: بسم الله ضربهذا الفلاس بفرغانه سنة ست و تسعين و ثلثمائة

Rev.: Within a beaded circle, الله / محمد / رسول الله / نصر بن على / ايلك

Circular legend: ما امر به الأمير المؤيد العدل نصر بن على مولى امير المؤمنين

This coin was minted by al-Mu'ayyid al-'Adl Ilek Naṣr b. 'Alī, mentioning no suzerain.

14. Farghāna, 397 / 1006–07: 2.45 g, 27 mm.

Obv.: In the field, لا اله الا الله / وحده لا شريك له. Mint-date formula forms a square on the sides of the *kalima*, [sic] بسم الله ضرب / هذا الفلاس / بفرغانه سنة / سبع و تسعين

Rev.: Within a circle, الله / محمد / رسول الله / ايلك

Circular legend: ما امر به الأمير الجليل نصر بن على يده الله

This coin was minted by Ilek Naṣr b. 'Alī, mentioning no suzerain.

15. Ush, 398 / 1007–08: 2.37 g, 28 mm. Plate 24.

Obv.: Within a circle, ايلك. Circular legend: بسم الله ضربهذا الفلاس باوش سنة ثمان تسعين ثلثمائة

Rev.: Within a circle: الله / محمد / رسول الله

Circular legend: ما امر به الأمير الجليل المؤيد العدل يده الله

This coin was minted by al-Mu'ayyid al-'Adl Ilek (Naṣr b. 'Alī), mentioning no suzerain.

16. Uzgend, 8 (there was no place for other numerals): 2.5 g, 27 mm.

Obv.: Within a circle, نصر . Circular legend: [sic] بسم الله ضرب هذا الفلاس بازكند
سنة ثمان

Rev.: Within a circle, الله / محمد / رسول الله / ملك / الجليل

Circular legend: [sic] ما امر به الأمير الجليل نصر بن علي مولى امير

This coin was minted by Naṣr b. ‘Alī, mentioning no suzerain. The earliest Qarākhānid fals of Uzgend was minted in 389 (Kochnev 1995: 208/78), so this coin was minted in 398.

17. Ilāq, 400/1009–10: 2.35 g, 28 mm. Plate 25.

One side: In the field, لا اله الا الله / وحده / لا شريك له

Inner circular legend: بسم الله ضرب هذا الفلاس بابلق سنة اربعمائه

Outer circular legend: ما امر به الخان العادل ناصر الحق ابو نصر خاقان

Other side: Within a circle, الله / محمد / رسول الله / بكر بن محمد / (جمال؟)

Circular legend: ما امر به الأمير الأجل أحمد بن علي مولى امير المؤمنين

One side of the coin mentions the suzerain, the Qarākhānid Nāṣir al-Ḥaqq Abū Naṣr Khāqān (Aḥmad b. ‘Alī). The other side of the coin mentions the suzerain, Aḥmad b. ‘Alī, and a vassal, Bakr b. Muḥammad. This coin is a mule minted by different dies, each with the formula ما امر به “from he who ordered (to mint)”. On a normal coin, only one such legend could exist, because the formula ما امر به denoted the owner of the town who had the right to mint coins there.

I postulate that Bakr b. Muḥammad was son of Muḥammad b. Maṣṣūr, the second ruler from the semi-independent dynasty of Dihqāns of Ilāq. When Hārūn Boghrā Khān captured Bukhārā, the capital of the Samanids, in 382/992, the dihqān Maṣṣūr b. Aḥmad started to mint coins in Ilāq citing Boghrā Khān as suzerain. Maṣṣūr b. Aḥmad was the founder of the semi-independent dynasty of Dihqāns of Ilāq, who were vassals of the Qarākhānids.

The *dihqāns* were a hereditary landowning aristocracy, and the ruling class in the country, before the Arab invasion of Central Asia. The Arab conquest dealt them a hard blow. Some perished, others lost part of their estates, confiscated by the Arabs. They were forced out of positions of authority. The loss of land could not but weaken them, but even on the eve of the fall of the Samanids, many *dihqān* families were still powerful. Some of them even ruled semi-independent dominions at the frontiers of Samanid state. The family of Dihqāns of Ilāq was not among those semi-independent rulers, but the Arab geographer Muqaddasi (c. 985) mentioned the “mighty Dihqān of Ilāq”, and the anonymous author of the “Hudud al-‘Alam” (c. 982–83) added that in ancient times the ancestors of the Dihqān

of Ilāq ruled this country. So the Dihqān of Ilāq regarded the Qarākhānids who started the conquest of the Samanid state as liberators. The dynasty of Dihqāns of Ilāq existed at least until 401/1010–11, i.e., about twenty years (Fedorov 2001d: 10–13).

18. Samarqand, 400/1009–10: 2.12 g, 27 mm.

Obv.: Within a circle, الله / لا اله الا / الله وحده / لا شريك له / احمد

Circular legend: بسم الله ضربهذا الفليس بسمرقند سنة اربعمائه

Rev.: Within a circle, الله / محمد / رسول الله / نصر بن علي / اهلك

Circular legend: لله الامر من قبل و من بعد و يومئذ يفرح المؤمنون بنصر الله (Qur'an 30.3–4).

This coin was minted by Ilek Naṣr b. 'Alī, mentioning no suzerain. On the obverse under the *kalima* (i.e., in the place allocated for the vassal or subvassal) is cited Aḥmad (the name is written with small letters). This indicates that this Aḥmad was a vassal of Naṣr.

19. (Kash)ghar, 400/1009–10: 3.05 g, 25 mm. Plate 25.

Obv.: Within a square, قدر / خان. Above the word قدر there is a crescent. Mint-date formula forms a square on the sides of it,

بسم [sic] ضرب / هذا فليس / ... غر سنة / اربعمائه

Rev.: Within a square, الله / محمد / رسول الله / ملك المشرق. Marginal legend forms a square on the sides of it,

ما امر به الا / مير ناصر الد / و له قدر خان / مولى امير المؤمنين [sic]

This coin was minted by the head of the Eastern Qarākhānids, Qadir Khān, in his capital Kāshghar.

20. Farghāna-(A)khsiket, 401/1010–11: 3.1 g, 28 mm.

Obv.: In the field a figure made of mutually intersecting semi-circles, forming a kind of triangle in the center of the figure. Within the triangle, بادشاه. Mint-date formula forms a triangle on the sides of the central figure,

بسم الله ضربهذا / الفليس بفرغانه / سنة احد و اربعمائه

Rev.: Within a circle, الله / محمد / رسول / الله / بخسبكت

Circular legend: ما امر به الأمير المظفر نصر بن علي مولى امير المؤمنين

The coin was minted by Naṣr b. 'Alī, mentioning no suzerain.

This type, with the mintname Farghāna in the obverse circular legend and Khsiket (Akhsiket) under the reverse field legend, minted in 401 AH, was found at the Kashka-Terek hillfort near Uzgend (Fedorov 2001c: 82). This coin is the second of the type.

21. Farghāna, 402/1011–12: 5 g, 29 mm. Plate 25.

Obv.: In the field, لا اله الا / الله وحده / لا شريك له. On the sides, the mint-date formula, written in two squares. The second square is superimposed aslant

on the first square so that they form an eight-pointed star. First square, بسم غانه / سنة / اثنين ار / بعمائة. Second square, الله / ضرب / هذا ا / لفلس بفر
 Rev.: Within a circle, لله / محمد / رسول / الله / باد (؟ شاه ؟)
 Circular legend: ما امر به الأمير نصر بن علي مولى امير المؤمنين

This coin was minted by Ilek Naşr b. 'Alī, mentioning no suzerain.

22. (Farghāna?), mintname and date not placed on the coin: 2.87 g, 28 mm. Plate 25.

Obv.: Within four concentric circles (one linear, three beaded), لا اله الا / الله وحده / لا شريك له

Circular legend is absent.

Rev.: Within two concentric circles (linear, beaded), محمد / رسول الله / نصر بن علي

Circular legend: ما امر به الأمير نصر بن علي مولى امير المؤمنين

This coin was minted by Ilek Naşr b. 'Alī (not later than AH 403 / 1012), mentioning no suzerain.

23. Farghāna, 410 / 1019–20: 3.2 g, 26.5 mm. Plate 25.

Obv.: In the field, لا اله الا / الله وحده / لا شريك له. Mint-date formula forms a square on the sides of the *kalima*, بسم الله ضرب / هذا الفليس / بفرغانه سنة / عشرة اربع مائه

Rev.: Within a circle, لله / محمد / رسول الله / ارسلان خان / ايلك

Circular legend: ما امر به الأمير الجليل محمد بن علي مولى امير المؤمنين

This coin was minted by Ilek Muḥammad b. 'Alī, citing his suzerain Arslān Khān Maṣṣūr b. 'Alī. Muḥammad and Maṣṣūr were brothers of Toghān Khān Aḥmad b. 'Alī and Ilek Naşr b. 'Alī.

24. Farghāna, 411 / 1020–21: 2.1 g, 2.75 mm. Plate 25.

Obv.: In the field, لا اله الا / الله وحده / لا شريك له. Mint-date formula forms a square on the sides of the *kalima*, [sic] بسم الله ضرب / هذا الفليس / بفرغانه سنة / احدى عشرة و

Rev.: Within a circle, لله / محمد / رسول الله / ارسلان خان / ايلك

Circular legend: ما امر به الأمير الجليل محمد بن علي مولى امير المؤمنين

This coin was minted by Ilek Muḥammad b. 'Alī, citing his suzerain Arslān Khān Maṣṣūr b. 'Alī.

25. Far(ghāna), 413 / 1022–23: 2.9 g, 26.5 mm. Plate 25.

Obv.: Within a border of beaded and linear circle, لا اله الا / الله وحده / لا شريك له. Above the *kalima* are three ringlets (two above, one below), under the *kalima* is a circlet.

Circular legend: بسم الله ضرب هذا الفليس بفرغانه سنة ثلث عشرة و اربعمائه

Rev.: Within a border of three circles (linear-beaded-linear) is a lion oriented

to left, with head facing, tail above hindquarters, and right forepaw lifted.

Circular legend: ما امر به الأمير السيد الملك العادل نور الدولة أبو المظفر أرسلان خان

Previously unknown. This coin was minted by the head of the Western Qarākhānids, Arslān Khān Maṣṣūr b. 'Alī. No vassal is mentioned. The lion is connected with the title "Arslān Khān" (*arslān* is Turkish for "lion").

26. Uzgend, 417 / 1026–27: 3.05 g, 26 mm. Plate 26.

Obv.: In the field, سلیمان / بن شهاب / الدولة. On the sides, two vertical swords, hilt down.

Circular legend: بسم الله ضربهذا الفلس باوزكند سنة سبع عشرة و اربعمائه
Rev.: In the field, قدر خان. Above the title is a crescent. Within it is the word ملك. Below the title is a crescent (turned upside down). Within it is the word المشرق.

Circular legend: ما امر به الأمير المظفر قدر خان مولی امیر المؤمنین

In 416/1025–26 the Eastern Qarākhānids, headed by Qadir Khān Yusuf b. Hārūn, attacked the Western Qarākhānids and seized from them Balāsāghūn, Ṭarāz, Ispijāb, Shāsh, and eastern Farghāna. The coin of AH 416 Uzgend reflects those events. It was minted by Suleimān b. Shihāb al-Daula (i.e., Boghrā Khān Hārūn), mentioning his suzerain and brother, Qadir Khān I Yusuf b. Hārūn.

27. Uzgend, 419 / 1028: 2 g, 26.5 mm.

Obv.: Within a beaded circle, شهاب / محمد / رسول الله / سليمان بن / الدولة

Circular legend: ما امر به ... مولی امیر المؤمنین

Rev.: Field as no. 26.

Circular legend: بسم الله ضربهذا الفلس باوزكند سنة تسع عشرة و اربعمائه

This coin was minted by Suleimān b. Shihāb al-Daula, citing his suzerain, Qadir Khān Yusuf.

28. Uzgend, 422 / 1030–31: 4.05 g, 27 mm.

Obv.: In the field, لا اله الا الله وحده / لا شريك له

Outer circular legend: بسم الله ضربهذا الفلس باوزكند سنة اثنا عشرین و اربعمائه

Inner circular legend: ضربهذا الفلس سليمان بن شهاب الدولة عزه الله

Rev.: Within a double circle, لله / محمد / رسول الله / الملك المشرق / قدر خان

Circular legend: ما امر به الأمير الأجل يوسف بن هارون مولی امیر المؤمنین

The coin was minted by Suleimān b. Shihāb al-Daula, citing Qadir Khān Yusuf b. Hārūn as suzerain.

29. Uzgend, 42(1? 2?) / 1030–31: 2.7 g, 27.5 mm.

Obv.: Within a double circle, لا اله الا الله / وحده لا شريك / له قد رخافان

Circular legend: بسم الله ضربهذا الفلّس باوزكند سنة ... عشرين اربعمائه. The digit starts with the letter ا (*alif*), so it could be 1 (احدى), 2 (اثنان), or 4 (اربع). But since Qadir Khān died, according to Ibn al-Athīr, in AH 423 or, according to Jamāl Qarshi, in the first days of 424 (Bartold 1963a: 43), the date could not be 424 / 1032–33. Hence the date is 421 or 422 AH.

Rev.: Within a double circle, لله / محمد / رسول الله / الملك المظفر / فتحي

Circular legend: ما امر به الأمير (الأجل؟) سليمان بن شهاب الدولة مولى أمير المؤمنين

The coin was minted by Suleimān b. Shihāb al-Daula, mentioning Qadir Khān as suzerain.

30. Uzgend, 41... (7? 8? 9?) or 42... (1? 2? 3?): 2.25 g, 25 mm.

Obv.: A beaded circle inscribed in a square. In each corner of the square are three dots. Within the circle, ملك / قدرخان / الشرق. The word ملك is written within a crescent. Mint-date formula forms a square on the sides of the central legend, بسم الله ضرب / هذا الفلّس / باوزكند سنة / ... عشر From the date only part of the word عشر... has survived, so it could be 10 (عشرة) or 20 (عشرين).

Rev.: Within three circles (linear-beaded-linear), لله / محمد / رسول الله / ... الدولة

Circular legend: ما امر به الأمير ... سليمان ...

This coin was minted by Suleimān b. Shihāb al-Daula, citing Qadir Khān as suzerain.

31. Ush, (4)30 / 1038–39: 2.5 g, 26 mm. Plate 26.

Obv.: In the field, قدر خاقان. Above it is a crescent, below it is an arabesque.

Circular legend: بسم الله ضربهذا الفلّس باوش سنة ثلثين [*sic*]

Rev.: Within a circle, لله / محمد / رسول الله / قدر خاقان

Circular legend: ما امر به ...مير السيد سليمان بن شهاب الدولة مولى أمير المؤمنين

Previously unknown. This coin was minted by Qadir Khān II Suleimān b. Shihāb al-Daula; no vassal is mentioned. It is the first known coin minted by Qadir Khān II Suleimān b. Shihāb al-Daula in Ush. This coin shows that, in addition to Uzgend, Qadir Khān II Suleimān b. Shihāb al-Daula (i.e. Boghrā Khān Hārūn) also possessed Ush.

32. Ṭarāz, silver-plated Qarākhānid dirham of the middle of the eleventh century: 2.5 g, 23 mm.

Obv.: Within a beaded circle, لا اله الا / الله وحده / لا شريك له / نصر

Circular legend: بسم الله ضربهذا الدرهم بطراز سنة ...

Rev.: Within a beaded circle, لله / محمد / رسول الله / الملك الموفق / ...

This coin was minted by the Qarākhānid al-Malik al-Muwaffaq Naṣr (or

by al-Malik al-Muwaffaq and his vassal Naşr). Typologically it can be attributed to the middle of the eleventh century.

33. (Quz Ordu?): Copper-lead alloy fiduciary dirham, 6.1 g, 21 mm. Plate 26.
Obv.: Within a circle, لا اله الا الله / وحده لا شر / يك له زين / (الدين؟). Above the *kalima* is the letter و or ق. Circular legend: بسم الله ضرب هذا الدرهم ... مائة
Rev.: Within a circle, لله / محمد رسول الله / الفائم بامر الله / ارسلان تكين / نصر. Circular legend: ... ليظهره. (Qur'an 9.33).

Such copper-lead alloy dirhams were minted in Farghāna and the Chu valley from AH 442 to 449 in Farghāna and until 450 in the Chu valley, i.e., 1050–1059 AD (Fedorov 2002: 6). This type was not known before.

The legends on the coin look ungainly, as if made by an unskilled, clumsy die-sinker, probably illiterate. Some words look distorted. This created difficulties in reading the legend. Also, the coin is very worn.

The name on the reverse is *Naşr*. It is preceded by the title *Tegin*, preceded in turn by the badly worn word *Arslān* (or at least it looks like nothing else). *Arslān Tegin Naşr* is cited on some other copper-lead dirhams as well. In my articles on the bearers of the Qarākhānid titles *Arslān Tegin* and *Arslān Ilek* and on the genealogy of the Qarākhānids (Fedorov 2001e: 19; 2001f: 34–37), I established that *Arslān Tegin Naşr* was an Eastern Qarākhānid and son of Qadir Khān. He was cited with the *laqab* (honorary epithet) *Rukn al-Daula* on coins of 41... from Kāshghar. On coins of 419 Khogend he was cited as *Rukn al-Daula Arslān Tegin*. On coins of 423 Khojende he was cited as *Rukn al-Daula*. On all the coins he posed as a vassal of Qadir Khān. On a copper-lead dirham of 443/1052–53 (mintname did not survive) he was cited as *Shams al-Daula Arslān Tegin Naşr* (Qarākhānids usually had several *laqabs*). On the obverse there is a *laqab* *Zain al-Dīn* (?). This *laqab*, assuming I read it correctly, belonged to *Zain al-Dīn Boghrā Khān Muḥammad*, another son of Qadir Khān. He is cited on this coin as the suzerain of *Arslān Tegin Naşr*. If so, the coin was minted between 447/1055–56 and 449/1057–58. When Qadir Khān died, his son *Arslān Khān Suleimān* became the nominal head of the Eastern Qarākhānids (with his capital in Kāshghar). Around AH 447 a war broke out between *Arslān Khān Suleimān* and his brother *Boghrā Khān Muḥammad*. *Boghrā Khān* won the war, put *Arslān Khān* in prison, and became the head of the Eastern Qarākhānids. Fifteen months later, in AH 449, *Boghrā Khān* and the imprisoned *Arslān Khān* were killed in a palace revolution (Bartold 1963a: 44; Fedorov 1983: 114–116). The mintname on the coin described above did not survive, but some copper-lead alloy fiduciary dirhams bearing the name of *Naşr* (or his title or his *laqab*) were minted in Quz Ordū (i.e., Balāsāghun) or in Barskhān (Fedorov 2001f: 44).

34. Qarākhāqān Aḥmad b. 'Umar, no date and mintname: 4.23 g, 26 mm. Plate 26.

Obv.: Within a circle, قرا خاقان / احمد / بن عمر / شاهين. Circular legend, امر به الامير... صر

Rev.: In the field is a worn legend of unusual type (in three lines). The tentative reading of the last line, الملك السيد (?). Under it جع / خغ or جع / جغ. Circular legend, بسم الله ضربهذا...

Both the ruler and his coins were not known before. The coin is badly worn. The Qarākhānid 'Umar b. Toghrul Tegin (later Khān) was mentioned in chronicles in 467/1074–75 and 473/1080–81. He minted mainly in Ṭarāz (AH 462, 467, 468, 472). His son Jabra'il b. 'Umar was mentioned c. 494/1100–01 as the ruler of Ṭarāz and Balāsāghūn who conquered Bukhārā and seized the throne of the Western Qarākhānids. A coin of AH (49)4 Bukhārā is known citing him as Ṭabghāch Khān Jabra'il. In 495, he invaded the Seljuq state and took Termez but was killed by Sanjar, the Seljuqid ruler of Khorasan, on 2 Sha'bān 495/22 May 1102 (Fedorov 2001b: 19–20). In my opinion Aḥmad b. 'Umar was the brother of Jabra'il b. 'Umar, who began to rule in Ṭarāz and Balāsāghūn either in AH 494 after Jabra'il b. 'Umar had conquered Bukhārā or in AH 495 when Jabra'il b. 'Umar was killed by Sanjar near Termez. So the coin of Aḥmad b. 'Umar could be minted either in Ṭarāz or Balāsāghūn after AH 494 or 495. 'Umar at first had the princely title Toghrul ("falcon") Tegin, which he changed to the khan title Toghrul Khān. *Ṭoghrul* in Turkish means "falcon"; شاهين (*shāhīn*) is "falcon" in Persian. So it is Aḥmad son of 'Umar Shāhīn ('Umar "Falcon").

35. (Kāsān), no date: 2.8 g, 22 mm.

Obv.: Within two circles (beaded, linear), لا اله الا / الله وحده / لا شريك له. Above it three dots (two above, one below). Circular legend does not survive.

Rev.: Within three circles (linear-beaded-linear), عدل / طغرل / خان. Circular legend does not survive.

Toghrul Khān Naṣr b. Ḥusain ruled Kāsān. Some of his coins have the dates 564/1168–69, 568/1172–73, 576/1180–81 (Fedorov 2000: 9–10).

36. Uzjend, 609/1212–13: silver-washed copper fiduciary dirham, 10.75 g, 44 mm.

Obv.: Within a circle, لا اله الا / الله وحده / لا شريك له. Above it is a circlet.

Circular legend: مغز الد نيا و الدين كوج ارسلان خاقان محمود بن احمد

Rev.: Within a circle, السلطان المعظم / علا الد نيا و الدين / ابو المظفر محمد / بن سلطان تكش

Circular legend: ضربهذه الدرهم في بلدة الأوزجند في شهور سنة تسع و ستمائة

In 609/1212–13 the Qarākhānid ruler of Samarqand, 'Uthmān b.

Ibrāhīm, having had his fill of the Khwārizmshāh and Khwarizmians, mutinied. The Khwārizmshāh crushed the mutiny and executed 'Uthmān. Then he sent envoys to the "amirs of Farghāna and Turkistān", demanding obedience from them (Bartold 1963b: 430). This coin was minted in 609 in Uzzend (from the second half of the twelfth century the mintname was written this way) by the Qarākhānid Kuch Arslān Khān Maḥmūd (who minted in 608 as an independent ruler) mentioning Muḥammad Khwārizmshāh as his suzerain. But also in the same year coins were minted in Uzzend in the name of Muḥammad Khwārizmshāh only (Osh History Museum, KP 3598, no. 123, 123 / 1,2). Thus came to an end the dynasty of the Qarākhānids, who ruled Uzgend / Uzzend for more than two hundred years.

37. Almāligh, 657 / 1258–59: silver-washed copper fiduciary dirham, 5.1 g, 34 mm.

Obv.: Within double circle, لا اله الا / الله محمد / رسول الله / الناصر لدين / الله. Above it an arabesque.

Rev.: Within double circle,

ضرب هذا [sic] / بسكة المالخ في / شهور سنة سبع و خمسين ستمائة

This Chaghatayid silver-washed copper fiduciary dirham was minted in eastern Turkestan. Like all other Chaghatayid coins of the thirteenth century it did not mention any ruler. The first Chaghatayid khān to be mentioned on coins was Kibak (709 / 1309–10, 718–726 / 1318–1326). Having come to power for the second time in AH 718, he started his reign with a monetary reform. On the new coins which appeared as a result of this reform was placed the name of this khān.

38. Farghāna, 390 (3x9?): 2.85 g, 26 mm. Overstruck. Plate 26.

Obv.: Within a beaded circle in the center is something illegible (or an arabesque?). Under it traces of another beaded circle and the letter د (?) upside-down (remaining from the original type). Circular legend,

بسم الله ضرب هذا الفلاس بفرغانه سد (?) or سك (?) ه (?)...

Rev.: Within a beaded circle, الله محمد / رسول الله. Under it traces of another beaded circle and word الله turned upside-down. So the original coin also had the legend رسول الله محمد / محمد within the beaded circle. The inner circular legend of the original coin was the *kalima*, from which survived only the beginning and the end: لا اله... شريك له. The outer circular legend of the original coin was the mint-date formula, from which survived... تسعين (?)

بسم... تسع (?) or و ثلث

Circular legend of the second die: ما امر به... مظفر تنكا (?) ت ...

The coin was originally minted in AH 390 (3x9?) and then was overstruck in Farghāna. In the reverse circular legend of the second die there is a word

that looks to me like نىك. If my reading is correct, the coin was overstruck in the reign of Tonga Tegin Naşr b. 'Alī. His earliest coin of Farghāna was minted in 384/994–95. His latest coin of Farghāna was minted in 402/1011–12.

Discussion

The coins found at the Andizhanskoe *vodokhranilishche* provide valuable information on the monetary circulation in medieval Andukān and its vicinity. The collection comprises coins minted between 312/924–25 and 657/1258–59.

There are six Samanid coins of the tenth century: five were minted at the mint "Farghāna" (358/968–69, 358/968–69, 359/969–70, 359/969–70, 367/977–78); one was minted in Uzgend (312/924–25). Under the Samanids the main town of Farghāna was Akhsiket, so the coins with the mintname "Farghāna" would have been minted there. Samanid coins constitute 15.8% of coins found at the Andizhanskoe *vodokhranilishche*.

The Qarakhanid Naşr b. 'Alī conquered Farghāna from the Samanids and made Uzgend his capital. Now a Qarākhānid mint with the mintname "Farghāna" worked in Uzgend. Starting from 384/994–95 it minted copious fulus for the whole of Farghāna province. Sometimes fulus with the mintname "Farghāna" were minted in other towns of the province, but in such cases a double mintname was put on the coins: Farghāna-Akhsiket (our no. 20), Farghāna-Ush, Farghāna-Qubā, Farghāna-Marghinān. There was no mintname Farghāna-Uzgend since it was known that the mint named "Farghāna" operated in Uzgend, the capital (Fedorov 2000: 10).

Qarākhānid coins constitute 81.58% of the coins found. There are nine coins with the mintname Farghāna (i.e., Uzgend; AH 387, 388, 390(?), 396, 397, 402, 410, 411, 413) and seven coins with the mintname Uzgend (AH 389, 398, 417, 419, 422, 41X, 42X). Thus, the mintage of Uzgend, the Qarākhānid capital of Farghāna, constituted 42.1%. There are also two coins each of Akhsiket (AH 394, 401) and Ush (AH 398, 430). Qarākhānid coins minted in the Farghāna valley between AH 387 and 430 constitute 52.63% of the total coins found at the Andizhanskoe *vodokhranilishche*. Two coins of Naşr b. 'Alī without mintname and date repeat the type of coins with the mintname Farghāna and most likely were also minted there (not later than 403/1012). If so, this would raise the percentage to 57.9%. Qarākhānid coins minted outside the Farghāna valley also circulated there: Samarqand (AH 400), Kāshgar (AH 400), Ilāq (AH 393, 400). Qarākhānid coins of the first half of the eleventh century constitute 68.4%. Qarākhānid coins of the second half of the eleventh century constitute 5.3%: Ṭarāz (eleventh century), Quz Ordū (?) (c. 448–49/1056–58). Qarākhānid coins of twelfth to the beginning of the thirteenth century (nos. 34–37) constitute 7.9%: Quz Ordū (or Ṭarāz?) (c. 494–95/1100–02), Kāsān (c. 564–76/1168–81), Uzjend (609/1212–13). There is one

Chaghatayid coin: Almāligh (657/1258–59).

The coins found at the Andizhanskoe *vodokhranilishche* show that monetary circulation and commodity-money relations in tenth-century Andukān were not yet intensive and were served by local coins, minted at the mint called “Farghāna” (in Akhsiket). Samanid coins minted outside the Farghāna valley were not found. The situation changed under the first Qarākhānids. In the first half of the eleventh century there was a boom of monetary circulation and commodity-money relations in Andukān. In the first half of the eleventh century the monetary mass in circulation grew more than four times (15.8% to 68.4%). In addition to coins minted in the Farghāna valley, Andukān was also supplied with foreign coins. They show Andukān’s trade relations with other towns: Samarqand, Ilāq, Ṭarāz, Kāshghar. Coins of the second half of the eleventh, twelfth, and thirteenth centuries are scarce (13.2%).

The explanation for this phenomenon is different for different periods. For the second half of the eleventh century it was because copper coins circulated for many decades after they had been minted. In the second half of the eleventh century the market was still sated by the copious copper mintage of the first half of the eleventh century. There was no need to mint new copper coins. For a more recent example, in the Bukhārā amirate there was a break of more than thirty years in mintage of copper coins from AH 1288 to 1318 (1871–1901 AD) (Burnasheva 1972: 70, 76). The same occurred with silver (billon) coins: for example, in the Farghāna valley coins minted by Subhān Quli Khān (1680–1702) were in circulation for 80 to 100 years after having been minted. Deeds of purchase written in the Farghāna valley in 1760, 1763, 1782, and 1784 described the money paid as “silver tangas of Sayyid Subhān Quli Khān *current in our time*” (Davidovich 1964: 170). As for the twelfth century, there could be a different reason. It is not out of question that the gradual decline of Andukān had started already in the twelfth century and that the Mongol invasion of Central Asia only dealt Andukān the final blow.

SHELJĪ

On the left bank of the Talas, east of the village Kirovskoe (Talasskaia oblast, Kyrgyz Republic), there is a big hillfort called Sadyr Kurgan, the site of the ancient town of Shelji. It comprises a citadel, a *shahristan* (central part of a town), and a *rabad* (suburb) protected by ramparts.¹ A recent (and improved) plan of Sadyr Kurgan was made by M. Tur, a former student of mine, a teacher of history in the Kirovskoe school, and an enthusiast of archeology (Fig. 1).

Shelji originated as an *ordo* (fortified headquarters and camp) of a nomadic Turkic ruler, built at the brink of a terrace rising 5 to 6 meters above the riverbed

1. There is no consensus about the size of the town. According to O. G. Bol’shakov (Belenitskii et al. 1973: 206) the size of the *shahristan* was about 5 hectares and of the

level. The architectural plan of the so-called citadel and *shahristan* of Shelji is a replica of an *ordo* built around the end of the seventh or first half of the eighth century for the Turkic nomad rulers of the Atbashi valley in the Tien Shan mountains, Koshoi Korgon hillfort. It was a square fortress of about the same size, 250 × 245 meters (6.125 hectares) with a palace built close to the fortress wall (Fedorov 2001a: 394, 398, 401; 2001g: 362). Shelji likewise had a square fortress of about 240 × 240 meters (5.76 hectares), with a palace built close to the fortress wall. The difference is that the palace in Atbashi was a smaller, one-story building, while in Shelji it was a *kushk* (donjon) and more spacious. The situation in the Turk Qaganate (enrichment of khans and aristocracy as a result of victorious wars, political instability, and strife between aristocracy and nomads) dictated the necessity of building fortresses, where khans and warlords could keep treasure and hide from enemies. One of the first to do this was Yshbara Qagan (651–657), who built a fortress in the “Valley of a Thousand Springs” south of the Talas river (Gumilev 1967: 239). Then not only qagans but also their warlords started to build fortresses. By the middle of the eighth century the building of *ordos* was not at all uncommon: Eletmish Bilge Qagan built for himself not one, but two *ordos* in 750 and 752 (Kliashtornyi 1983: 122). I do not insist that the *ordo* in Shelji was built by Yshbara, but the fact that it was originally an *ordo* of a nomadic Turkic ruler is certain, and I date this *ordo* to the middle or second half of the seventh century AD.

Later, in the first half of eighth century, a town sprang up on three sides (to the north was a precipitous terrace edge) of the *ordo*, which became the citadel of this town. Like the citadel, this *shahristan* was surrounded by a wall built of *pakhsa* (layers of hard-beaten clay). The city wall was reinforced by jutting towers and a moat. Then on three sides of the *shahristan* sprang up a *rabad* (a suburb populated by lower-class townsfolk: craftsmen, petty traders, and so on). The economy of Shelji was closely linked to and greatly dependent on the rich deposits of silver ore

rabad about 20 hectares. A. N. Bernshtam (1963: 116–117) wrote that the size of the *rabad* was about 60 hectares, which is about the same as on the plan made by M. F. Tur (Fig. 1). According to his plan the so-called citadel was nearly an octagon of about 100 meters from east to west and 60 meters from north to south (about 0.48 hectare). The so-called *shahristan* was a square of about 240 by 240 meters (about 5.76 hectares). According to Bernshtam the so-called *rabad* was roughly a heptagon of about 900 meters from east to west and 700 meters from north to south (about 63 hectares). According to Tur’s plan the so-called *rabad* was roughly a heptagon of about 800 meters from east to west and 700 meters from north to south (about 56 hectares). But what Bernshtam, Bol’shakov, and Tur called the “citadel” was in fact a *kushk* (donjon-type castle), what they called the *shahristan* was the citadel, and what they called the *rabad* was the *shahristan*. And what Tur called “the closest vicinity of the town protected by two ramparts” (one about 7, the other about 11 kilometers long) was the *rabad* (or rather *Rabad* 1 and *Rabad* 2).

in the adjacent mountains.

In 280/893 Isma'īl Samani seized Ṭarāz,² the capital of the Talas valley, and turned the Christian church of Ṭarāz into a mosque (Bartold 1965b: 495). Ṭarāz was situated on the southern bank of the Talas, 30 kilometers northwest of Sheljī. Sixty kilometers east of Sheljī, on the southern bank of the Talas, was Tekabket (modern Talas). The incorporation of Ṭarāz into the Samanid empire (the rulers of Ṭarāz, though, enjoyed the status of semi-independent vassals) gave a powerful impulse to economic development in the Talas valley, especially of mining and metallurgy. Numerous silver mines were opened and worked in the mountains close to Sheljī, operated mainly by immigrants. Around 985, according to the Arab geographer al-Maqdisī (*Istoriia* 1984: 272), there were 10,000 Isfahanian miners in the area of Sheljī (the Persian province of Isfahan was famous for its mines). In the tenth century the *rabad* of Sheljī grew considerably and was surrounded by a city wall with towers and moat. The length of this wall (including some old fortifications) was about 7 kilometers, and by this time Sheljī occupied an area of about 280 hectares.

The heyday of Sheljī was under the early Qarākhānids (eleventh century). The town grew bigger. By the walls of the old *rabad* a new *rabad* formed and eventually was surrounded by a wall about 11 kilometers long, so that the total area occupied by Sheljī grew to 690 hectares. In the first quarter of the eleventh century Sheljī even had a mint. The first dirham of Sheljī, minted in 413 / 1022–23, was published by me 32 years ago (Fedorov 1974: 163).

Like many other towns of the Chu and Talas valleys, Sheljī perished and was abandoned as a result of the Mongol invasion and bloody internecine wars which ravaged the country in the thirteenth and fourteenth centuries. According to the archaeological data Sheljī was restored under Timūr (1370–1405) and the Timurids. We lack the information of chronicles about Timurid Sheljī, but according to Sharaf al-Dīn Yezdī (*Materialy* 1973: 144), in 1398 Timūr ordered the rebuilding and peopling of the town of Ashpara (about 150 kilometers east of Sheljī) and the restoration of arable farming there; it must have been the same with Sheljī. After the fall of the Timurids, who had managed to protect the sedentary population in the revived towns of Semirechie from the arbitrariness and harrying raids of nomads, Sheljī was abandoned again, this time for good.

In the 1960s the construction of the poorly situated Kirovskoe *vodokhranilishche* (reservoir, storage pond) was started. By around 1969 the greater part of Sadyr Kurgan was submerged; only the highest point of the ancient

2. In the nineteenth century this was the location of the Kazakh town of Aulie Ata, which in 1936 was renamed Dzhambul, after a Kazakh poet who eulogized Stalin and his NKVD chief Beriia. After the disruption of the Soviet Union this town was again renamed Taraz.

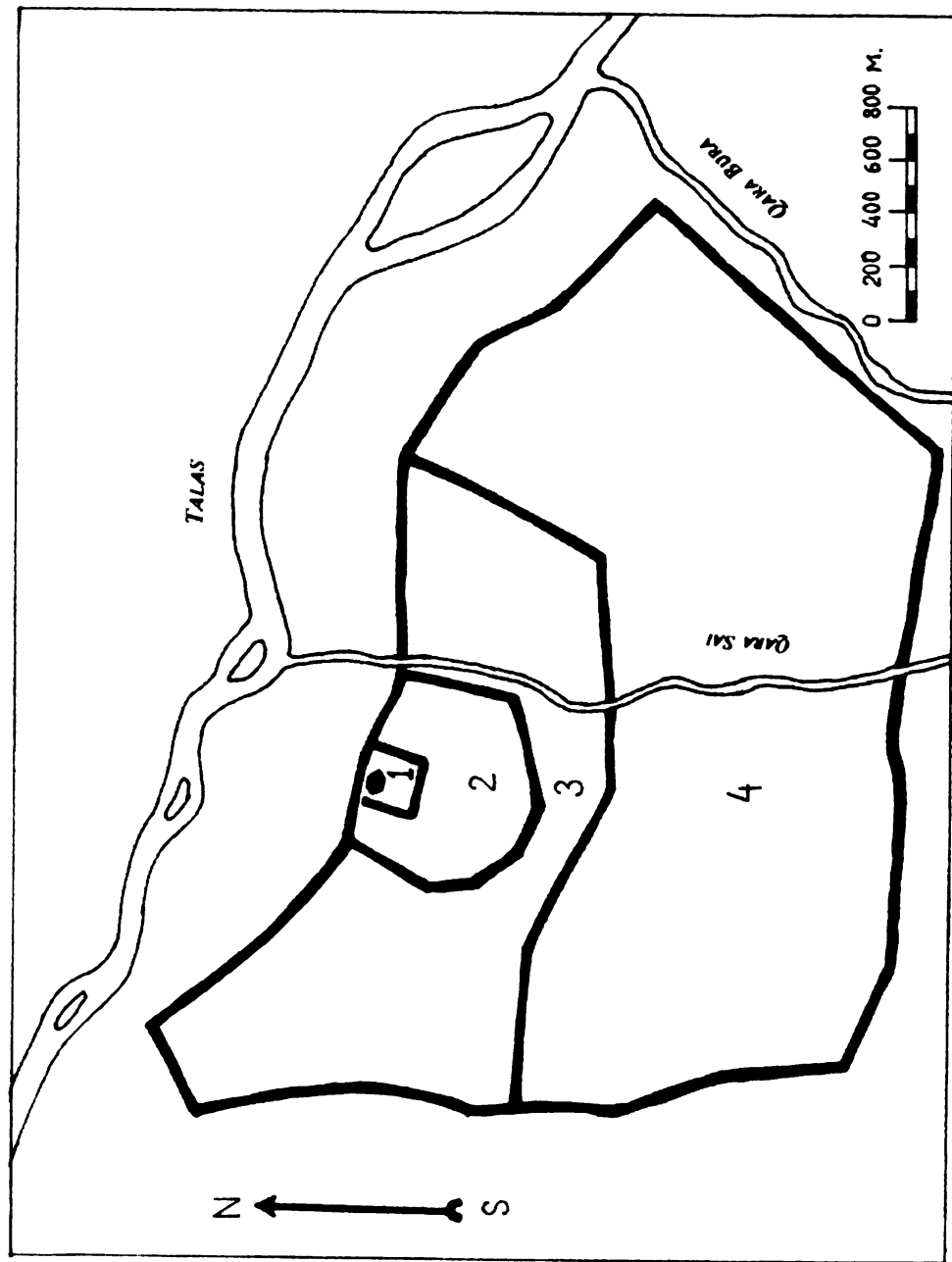


FIGURE 1. Plan of Shelji.

town, mainly the citadel, remained above the surface as an islet. The water stored is intensively used to irrigate the surrounding fields, so each year the reservoir grows shallow by autumn. As the water retreats, archaeological artifacts are found on the exposed bottom.

Between 1983 and 1989 M. Tur (then an external student of the State Kirghiz University) brought me ancient coins found by himself and his pupils at the Kirovskoe *vodokhranilishche* (in all 124 coins) which I identified. These coins are kept in the Kirovskoe school archaeological museum. In 2003 the Bishkek antiquary and numismatist A. M. Kamyshev sent me scans of the coins he had found at the Kirovskoe *vodokhranilishche* (in all 33 coins). The coins found by Tur are marked with the letter T; the coins found by Kamyshev with the letter K. Fourteen coins (mostly Chinese) were identified for Tur by the Kazakh numismatist R. Burnasheva. These coins are marked with the letter B. The information provided for the coins identified by others was sometimes incomplete. The coins are listed in chronological succession.

Catalogue

- 1–3. TB, K. Chinese bronze *Kai Yuan Tong Bao*. Plate 26.
- 4–5. K. Local imitations of *Kai Yuan Tong Bao* coins.
6. T. Sogdian bronze coin issued by the Sogdian *ikshid* (king) Urk Waratramuka. Second half of the seventh century (starting in the second quarter of the seventh century, Sogdian coins were made in the style of the *Kai Yuan Tong Bao* coins). Plate 26.
7. K. Tyurgesh coin, usual type. The Tyurgesh qaganate existed from 704 to 766 AD. Plate 26.
- 8–10. T. Badly effaced bronze coins with square hole; by appearance they are Tyurgesh coins.
- 11–13. Tyurgesh coins, the type with the second variant of tamgha. Plate 26.
14. K. Tyurgesh coin with Tyurgesh tamgha and Tyurk rune “r2” (issued in the Talas valley).
15. K. Tyurgesh coin with blank reverse.
- 16–19. K. So-called Tukhus coins, issued by “Tukhus” (some scholars doubt the reading) rulers mentioning the Tyurgesh qagan as suzerain.
20. K. Arabo-Sogdian drachm (deriving from the Bukharkhudat-type Sogdian drachms) citing the governor of Khurasan, Muḥammad al-Mahdī, son of the

caliph al-Manṣūr. According to O. Smirnova (1963: 48), between 141/757 and 151/768 he was mentioned on coins as Muḥammad and after 151/768 as al-Mahdī. So the coin in question was minted between AD 757 and 768. Plate 27.

21. TB. Dirham *Githrifi* (deriving from the Bukharkhudat-type Sogdian drachms). R. Burnasheva did not elaborate the description. Dirhams *Githrifi* were mostly minted under the Samanids.
- 22–23. K. Dirhams *Museiyabi* (deriving from the Bukharkhudat-type drachms). A. Kamyshev did not elaborate the description. Dirhams *Museiyabi* were mostly minted under the Samanids.

24. K. Bukhārā, (3)58/968–69: 4.32 g, 28 mm. Plate 27.

Obv.: Within a circle, لا اله الا / الله وحده / لا شريك له / ابي بكر. Above it is a ringlet.

Circular legend: [sic] بسم الله ضرب هذا الفلاس / ببخارا على يدي المهرج سنة ثمان وخمسين

Rev.: Within a beaded circle, لله / محمد / رسول الله / الملك المظفر / منصور / بن نوح.

Circular legend: لله (Qur'an 30.3–4) الله الامر من قبل و من بعد الخ

This fals mentions the Samanid amir Manṣūr b. Nūḥ, the mint official al-Muharrij(?), and Abū Bakr. Abū Bakr could be a general or high official granted the privilege to be mentioned on the coins of Bukhārā (and part of taxes collected from Bukhārā).

25. K. Ispijāb, 385/995: 2.5 g, 26 mm.

Obv.: Within a border of three circles (linear-linear-beaded), مت.

Circular legend: بسم الله ضرب هذا الفلاس باسبجباب سنة خمس و ثمانين و ثلثمائة

Rev.: Within a border of three circles (linear-beaded-linear), لله / محمد /

رسول الله / ملك المؤيد / نوح بن منصور

Circular legend: ما امر به الأمير (محمد بن ال؟) حسين مولى امير المؤمنين

This fals mentions the Samanid amir Nūḥ b. Manṣūr and his vassal, the semi-independent ruler of Ispijāb (modern Chimkent in Kazakhstan) from the dynasty of the Mutids.

26. K. Farghāna, 388/998: 2.25 g (the coin is chipped), 27 mm.

Obv.: Within a beaded circle, خان. On the sides of the circle the *kalima* is written in such a way that it forms a triangle: لا اله الا / الله وحده / لا شريك له. All that is within a linear circle.

Circular legend: بسم الله ضرب هذا الفلاس / بفرغانه سنة ثمان و ثمانين و ثلثمائة

Rev.: Within a border of two circles (linear and beaded), لله / محمد / رسول الله / ايلك / الجليل

Circular legend: ما امر به الأمير الجليل المؤيد العدل ولي امير المؤمنين

This fals was minted by the Qarākhānid Ilek al-Jalīl (Naṣr b. 'Alī), mentioning Khān (Aḥmad b. 'Alī, brother of Naṣr) as suzerain.

27. T. Ilāq, 399 / 1008–09: 27.5 mm.

Obv.: Within a border of two circles (linear and beaded), the words لا اله الا الله placed within the big word الله. Above it (in small letters), دهقان; under it, الجليل.

Circular legend: بسم الله ضربهذا الفلاس بايلاق سنة تسع و تسعين و ثلثمائة

Rev.: Within a double linear circle: لله / محمد رسول / الله ابو شجاع / سالار بن محمد

Circular legend: ما امر به ... السيد المظفر ... نصر الملة

This fals was minted by a representative of the semi-independent dynasty of the Dihqāns of Ilāq, Salār b. Muḥammad, mentioning as suzerain the Qarākhānid Khān Naṣr al-Milla (i.e., Aḥmad b. 'Alī).

28. K. Shāsh, 425 / 1033–34: billon (silver-plated) dirham, 5.34 g, 27.5 mm.

Obv.: Within double circle, لا اله الا الله وحده / لا شريك له. Above it, سلطان. Under it, الدولة.

Circular legend: ... با لشاش سنة خمس عشرين و اربع مائة

Rev.: Within double linear circle, لله / محمد رسول الله / القائم بامر الله / ارسلان خان بادشاه

Above it, قدر خاقان Under it, جبرئيل بن

Circular legend: ... ارسله بلهدي ودين الحق... (Qur'an 9.33).

This coin mentions three brothers, sons of the former head of the Eastern Qarākhānids, Qadir Khān Yusuf (who died in the first days of AH 424): suzerain Arslān Khān (Sulaimān), vassal Sulṭān al-Daula (Muḥammad), and sub-vassal Jabra'il b. Qadir Khān.

29. T. Ṭarāz, 436 / 1044–45: billon (silver-plated) dirham, 27.5 mm.

Obv.: In the field, لا اله الا الله وحده / لا شريك له. Above it, عضد. Under it, الدولة؟

The mint-date formula forms a square on the sides of the central legend:

بسم الله ضرب / هذا الدرهم / بطراز سنة ست / و ثلثين و اربع مائة

Rev.: Within double linear circle: سيف / محمد رسول الله / القائم بامر الله ... / المظفر بغرا... / السلام

Circular legend: ... ارسله بلهدي ... (Qur'an 9.33).

This coin cites the Eastern Qarākhānid Boghrā Khān Muḥammad b. Yusuf, whose capital was Ṭarāz.

30–40. T. Small hoard of Qarākhānid billon (silver-plated) dirhams. The coins are badly effaced. One of the coins was minted in Shāsh by Boghrā Khān Muḥammad b. Yusuf (424–449 / 1032–1058).

41. T. Ṭarāz, 45... (between AH 454 and 459): billon (silver-plated) dirham, 28 mm.

Obv.: In the field, لا اله الا / الله وحده / لا شريك له. Above it the letter د. Mint-date formula forms a square on the sides of it: بطراز / هذا الدرهم / سنة ... / و خمسين و اربع مائة

Rev.: Within a linear circle: لله / محمد رسول الله القائم / بامر الله عماد الد ولة و / تاج الملة سيف خليفة / الله طغفاج خان / ابراهيم

Circular legend: ... (Qur'an 9.33). ارسله الهدي و دين ...

In 448/1057–58 Arslān Khān Sulaimān attacked Boghrā Khan Muḥammad, but the latter routed his senior brother, captured his capital Kāshghar, and became the head of the Eastern Qarākhānids. Fifteen months later he was poisoned by one of his wives, who proclaimed her juvenile son Ibrahīm as supreme ruler (Bartold 1963a: 44). The usurper was mentioned on a dirham of AH 449 Ṭarāz as Arslān Khān Ibrahīm (find of D. Vinnik at Burana hillfort). There is a dirham of Ṭarāz minted in 454/1062 by Arslān Khān Ibrahīm (Kochnev 1997: 286, no. 1321). Ibn al-Athīr (*Materialy* 1973: 59) wrote that Ibrahīm was sent by his mother to attack the Qarākhānid ruler of Barskhān, Ināl Tegin, but the latter routed and killed him. The Western Qarākhānids took advantage of the internecine war of the Eastern Qarākhānids to attack them and reconquer all the dominions that they had lost to Qadir Khān Yūsuf in AH 416–418. No. 41 reflects those events. It was minted by the head of the Western Qarākhānids, Ṭafghāch Khān Ibrahīm b. Naṣr.

42. T. Badly effaced billon (silver-plated) dirham of the same type as no. 41.

43. K. Quz Ordū, 455 / 1063: billon (silver-plated) dirham, 4.95 g, 25 mm. Plate 27.

Obv.: In the field: لا اله الا / الله وحده / لا شريك له. Above it: ارسلان. Under it: فرا. خاقان عبد الخالق. On the sides of it two vertical swords, hilt down. Mint-date formula forms a square on the sides of the central legend: هذا / بسم الله ضرب / الدرهم / بقزاردو سنة خمس / و خمسين و اربع مائة

Rev.: Within a double circle: لله / محمد رسول الله القائم / بامر الله عماد الد ولة / و تاج الملة سيف خليفة / الله طغفاج خان / ابراهيم

Circular legend: ... (Qur'an 9.33). محمد رسول الله ارسله الخ

This coin was minted in Quz Ordū (Balāsāghūn) by the Eastern Qarākhānid 'Abd al-Khāliq, mentioning Ṭafghāch Khān Ibrahīm as suzerain. The AH 455 Quz Ordū dirham was not known before.

- 44–45. T. Badly effaced Qarākhānid billon (silver-plated) dirhams. The name of the caliph al-Qā'im bi-amr Allāh (422–467 / 1031–1075) is discernible.

- 46–70. Badly effaced copper-lead alloy fiduciary dirhams. Such coins were minted in the Farghāna and Chu valleys in 442–450 / 1050–1059.
- 71–72. TB. Chinese bronze coins of the Northern Sung dynasty, issued between 1078 and 1085 AD.
73. T. By texture and minting techniques this coin is close to the copper-lead alloy dirhams minted in the Eastern Qarākhānid khaqanate in 442–450 / 1050–1059. On the obverse part of the name of the caliph al-Muqtadī is discernible. Al-Muqtadī bi-amr Allāh reigned 467–487 / 1075–1094. Below the mention of the caliph is the name of the Seljuq sultan Malikshāh (465–485 / 1072–1092). The reverse is totally effaced. Al-Ḥusainī wrote that Malikshāh subjugated the ruler of Ṭarāz, “Surkhāb” (Ḥusaini 1980: 76, 204). Around 482 / 1089–90, Malikshāh invaded Mawarānnahr, captured Bukhārā and Samarqand, and took prisoner the Western Qarākhānid Khān Aḥmad b. Khiḍr. Then he crossed Farghāna, came to Uzgend, and demanded that Khān of Kāshghar recognize him as suzerain. The latter recognized him as suzerain (Bartold 1963: 379). The same occurred with the Qarākhānid ruler of Ṭarāz, “Surkhāb”. This name or title was clearly distorted as a result of scribal error. I believe it was شرخان *Sher Khān* (“Lion Khan”) rather than سرخاب *Surkhab* (“Ruby”). Most probably *Sher Khan* was a Persian rendition of the Turkish title *Arslān Khān* (“Lion Khan”), which was very popular with the Qarākhānids. So this coin reflects those events; it was minted c. 482 / 1089–90 by the ruler of Ṭarāz, citing Malikshāh as suzerain. The coin is oval, 23 × 20 millimeters.
74. TB. Chinese bronze coin of the Liao dynasty, issued between 1101 and 1109 AD.
75. TB. Bronze coin of the Xi Xia (Tangut) state, issued between 1171 and 1193 AD.
- 76–77. T. Two effaced Qarākhānid copper silver-washed fiduciary dirhams, diameters 34 and 21 mm. Such coins were minted in the Western Qarākhānid khaqanate in the second half of the twelfth century.
- 78–79. K. Copper coins. Weight: not given, 2.3 g. Diameter: 15 mm, 16 mm. Plate 27.
Obv.: Within a border of three circles (linear-beaded-linear): غور
Rev.: Within the same border: خان. There are no circular legends.
 غور خان (*Ghūr Khān*) is the title of the rulers of the Khitay nomads who, around 1137, conquered the Chu valley with its capital Balāsāghūn (or Quz Ordū) and created their state there. Most probably these coins were minted

in Balāsāghūn for the needs of trade in Balasaghun (mainly) and the Chu valley. But they could also have been used in other regions of the Khitay state. I deem that such coins were minted in the second half of the twelfth century.

80–83. TB. Samarqand, 1384. Weight, diameter, and metal of the coins were not provided. Judging by the date, they were minted by amir Timūr (1370–1405).

84. TB. Samarqand, 810 / 1407–08: weight, diameter, and metal of the coin were not provided. The coin mentions Muḥammad Jahāngīr and Khalīl Sulṭān. Timūr had four sons: Jahāngīr, ‘Umar Sheikh, Mīrānshāh, and Shāhrukh. Jahāngīr and ‘Umar Sheikh died during Timūr’s lifetime. Muḥammad-Sulṭān, the son of Jahāngīr and the most beloved grandson of Timūr, was proclaimed the heir, bypassing Mīrānshāh and Shāhrukh (the latter, though, was younger than Muḥammad-Sulṭān). However, Muḥammad-Sulṭān died in 1403. Timūr then made Khalīl-Sulṭān, son of Mīrānshāh, his heir. But Khalīl-Sulṭān incurred wrath of Timūr in 1404 by marrying (without his consent) a girl of low birth. So Timūr made Pīr-Muḥammad, son of Jahāngīr, his heir. However, when Timūr died nobody gave much heed to Pīr-Muḥammad, who was then in Qandahar. Leaning on their appanages and different amirs (generals) of Timūr’s army, his sons and grandsons started a struggle for power. Khalīl-Sulṭān, who commanded one of Timūr’s armies, hurried from Otrār to Samarqand. On 18 March 1405 he entered Samarqand in state. He put on the throne the juvenile Muḥammad-Jahāngīr (son of the late Muḥammad-Sulṭān) and ruled in his name.

85. T. Timurid copper coin. Khuttalān, 8(1?)₁ / 1408–09 or 8(2?)₁ / 1418: 25 mm.

Obv.: Within cartouche, ضرب ختلان

Rev.: Within cartouche, سنة احد و عشر ... و ثمانمائة

The second numeral is partly effaced: ...عشر. So it is not clear whether it is 10 (عشرة) or 20 (عشرين).

86. T. Timurid copper coin. Samarqand, 819 / 1416–17.

Obv.: Within triangular cartouche, three ringlets (state emblem of Timūr). On the sides, mint-date formula (badly effaced).

Rev.: Totally effaced.

This coin is identified by analogy with similar coins in a better state of preservation (Davidovich 1983: 69–70, no. 5).

87. T. Timurid copper coin. Samarqand, 819 / 1416–17: oval, 23×28.5 mm.

Obv.: Within cartouche, مبارك باد. On the sides of it, عد لية ضرب سمرقند

Rev.: Totally effaced.

The date is defined by analogy with similar coins in a better state of preservation (Davidovich 1983: 70, no. 4).

88. T. Timurid copper coin. Samarqand, 823 / 1420: oval 18×23 mm.

Obv.: Square cartouche. Within it two ellipses crossing one another to form a cross. On the sides of the cartouche, عد لية / ضرب / سمر / قند

Rev.: ثلاث عشرين ثمانمائة...

89–93. T. Timurid copper coins. Samarqand, 823 / 1420. Plate 27.

Obv.: Hexagram. Within it a six-pointed asterisk. Around the hexagram, / عد لية / ضرب / ب / سمر / قند

Rev.: سنة ثلاث عشرين ثمانمائة. One coin has a badly effaced countermark.

94. K. Timurid copper coin of 823 / 1420 Samarqand with lens-shaped countermark. The legend of the countermark is نیم دانگی سمرقند “half dangi, Samarqand” (*dangi* is the coin denomination). According to E. Davidovich (1983: 121–122), such countermarks were used in 832 / 1428–29 during the monetary reform of Ulughbek on the coins minted before this reform.

95–104. T. K. Timurid copper coins. Bukhārā, 832 / 1428–29. Plate 27.

Obv.: In the field is a six-petaled rosette with circle in the middle. Within the circle, بخارا. Around the rosette, لية / عد / س / فلو / ب / ضرب

Rev.: In the field, في التاريخ سنة اثنا ثلاثين و ثمانمائة

105–106. T. Badly effaced copper coins. Mint name بخارا is discernible. The same type as no. 95.

107. K. Timurid copper coin. Qarshī, 832 / 1428–29. The same type as the coins of AH 832 Bukhara, but the mintname is قرشي (Qarshī).

108–133. T. Badly effaced copper coins. By appearance and texture they appear to be Timurid coins.

134–135. T. Badly effaced Timurid copper coins with countermarks. One countermark is lens-shaped with the legend نیم دانگی سمرقند. Another countermark is badly effaced.

136. T. Sheibanid copper coin. Bukhārā, 918 / 1512–13.

Obv.: In the field, an eight-petaled rosette with a circle in the middle. Within the circle, بخارا.

Rev.: In the field, traces of the date. The date is defined by analogy with such coins in better state of preservation (Davidovich 1983: 81–82, no. 16).

137–155. T. Effaced or heavily oxide-encrusted copper coins: unidentified.

156. TB. Chinese bronze coin of the Ming dynasty issued between 1522 and 1566 AD.

157. TB. Chinese bronze coin of the Qing dynasty issued between 1662 and 1722 AD.

Discussion

The most ancient coin found near medieval Shelji is a drachm of the Sasanian shah Hormizd II (302–309). It was found in the barrow of a nomad. Of course, no monetary circulation or money-commodity relations existed then in the area. The coin was used as jewelry or a talisman.

The first coins in Shelji that served as means of circulation appeared in the second half of the seventh century, together with Chinese and Sogdian merchants who came there in order to buy silver obtained in the neighboring mountains and to trade with the nomadic Turkic rulers who built an *ordo* on the bank of the Talas. A Chinese *Kai Yuan Tong Bao* bronze coin (which appeared in 621 AD), local imitations of the *Kai Yuan Tong Bao* coins, and a Sogdian bronze coin issued by *ikshid* Urk Waratramuka in the second half of the seventh century attest to this (nos. 1–6 in the catalogue).

But one may speak of monetary circulation and money-commodity relations in Shelji only when the first local coins, issued in Semirechie for the needs of trade there, appeared. These were so-called Tyurgesh coins, citing the Tyurgesh qagan (the Tyurgesh qaganate existed in 704–766 AD). As a matter of fact, however, they were issued not by the Tyurgesh qagan, but by the rulers of Sogdian colonies in Semirechie who were vassals of the Tyurgesh qagan and cited their suzerain on their coins, which were issued for the economic needs of those Sogdian colonies (nos. 7–19 in the catalogue). Apart from those coins there were rare Arabo-Sogdian drachms (deriving from the Bukharkhudat-type Sogdian drachms) citing the governors of Khurasan or caliphs (no. 20 in the catalogue).

In 893 Isma'il Samani captured Tārāz, the capital of the Talas valley (Bartold 1965b: 495). The joining of Tārāz to the Samanid empire (even as a semi-independent vassal principality) gave a powerful impulse to the economic development of the Talas valley (especially of mining, metallurgy, and related crafts). Samanid coins are found in Shelji, though not especially often (nos. 21–25 in the catalogue). These coins incidentally allow us to trace the trade contacts of Shelji with other towns of the Samanid state (Bukhārā, Ispījāb). The Samanid coins of Bukhārā and Ispījāb found in Shelji were minted in the second half of the tenth century.

The heyday of Shelji was under the early Qarākhānids (eleventh century). In the first quarter of the eleventh century Shelji even had a mint where dirhams

were minted from silver mined in neighboring mountains. Strangely, coins minted at Sheljī have not so far been found in Sheljī. The money supply of Sheljī was served by "foreign", imported coins. The eleventh century was a peak of monetary circulation and money-commodity relations in Sheljī (nos. 26–70, 73 in our catalogue), especially the first half to the middle of the eleventh century. The monetary mass in circulation grew many times as compared to previous periods. The coins show the trade relations of Sheljī with other towns of the Qarākhānid khaqanate: Ilāq, Farghāna, Shāsh, ʿArāz, Quz Ordū (Balāsāghūn). Together with Qarākhānid coins, a sprinkling of Chinese coins circulated in the eleventh century in Sheljī (nos. 54–55, 57–58). They could have been brought by Chinese merchants who came to buy silver.

Qarākhānid coins of the last third of the eleventh and, especially, of the twelfth century are scarce in Sheljī. As mentioned above in the discussion of the finds from Andūkān, in the second half of the eleventh century the market was still sated with the copious mintage of the first half of the eleventh century. There was no need to mint new coins, especially of copper. For the twelfth century there could be another reason. It may be that the nomadic Khitay who conquered Semirechie caused, to some degree, a reversion to barter exchange. One way or the other, Qarākhānid coins of the twelfth century are quite rare in Sheljī. So far only two badly effaced fiduciary silver-washed copper dirhams have been found in Sheljī (nos. 76–77 in our catalogue). Such fiduciary coins, being in essence metallic banknotes, were accepted only in the territory of the principality that issued them, because they had a forced value decreed by the government. So these coins most probably were minted in the principality of ʿArāz. Apart from Qarākhānid coins, some coins minted in the name of the Khitay Ghūr Khān (certainly in his capital, Balāsāghūn) also circulated in Sheljī (nos. 78–79 in our catalogue).

In the collections of both Tur and Kamyshev there was not a single Chaghatayid coin, while at the neighboring Orlovskoe hillfort (medieval Kul, 40 kilometers east of Sheljī) two hoards of silver Chaghatayid coins minted in 1329–1346 and 1308–1358 (the latter comprising about 600 coins) were found (Masson 1957: 70–71). Like Balāsāghūn, Sheljī was abandoned as a result of the invasion of Chinghiz Khān and the devastating internecine wars of his descendants. Some towns, such as ʿArāz and several others, however, managed to survive.

The new boom of monetary circulation and commodity-money relations in the Sheljī that was revived by Timūr encompassed the last two decades of the fourteenth, the whole of fifteenth, and the first quarter of the sixteenth century. Then the town was abandoned again, this time for good.

The amount of Timurid and early Shaibanid coinage ($57 = 41.9\%$) surpasses that of Qarākhānid coins ($48 = 35.3\%$). However, this does not mean that the

Timurid period was a heyday for Shelji. On my request, Tur reported to me where each coin was found. Qarākhānid coins were found throughout the area of Shelji (about 690 hectares), while Timurid coins, with quite rare exceptions, were found only in the *shahristan* (about 60 hectares). This means that the area occupied by Timurid Shelji constituted only 9% of the area occupied by Qarākhānid Shelji. The large amount of Timurid and early Shaibanid copper coinage found in Shelji is explained by another reason. Davidovich (1983: 359) wrote that under the Timurids and early Shaibanids there was a “peak period in the development of small-scale commodity production, trade in consumer goods, and maximal involvement of ordinary citizens and part of the rural population in money-commodity relations in mediaeval Mawarannahr”. Also under Timurids the number of copper coins in circulation greatly surpassed the number of silver coins. Even large-scale transactions were served with copper money; for example, in 1484 in Samarqand a profitable bath-house, built of baked bricks, was sold for the enormous sum of 300,000 coppers³ (Fedorov 1991: 48), which gives a hint as to the quantity of coppers in circulation. This explains the fact that the number of Timurid copper coins in Shelji (Timurid silver coins have not so far been found) was somewhat larger than the number of Qarākhānid coins (41.9% vs. 35.3%).

REFERENCES

- Bartold, V. 1963a. Ocherk istorii Semirech'ia. *Sochineniia*, vol. 2, ch. 1, pp. 23–106. Moskva: Izd. Nauka.
- . 1963b. Turkestan v epokhu mongol'skogo nashestviia. *Sochineniia*, vol. 1. Moskva: Izd. Nauka.
- . 1965a. Andizhan. *Sochineniia*, vol. 3, p. 326. Moskva: Izd. Nauka.
- . 1965b. Taraz. *Sochineniia*, vol. 3, pp. 495–496. Moskva: Izd. Nauka.
- Belenitskii, A. M., I. B. Bentovich, and O. G. Bol'shakov. 1973. *Srednevekovyi gorod Srednei Azii*. Moskva: Izd. Nauka.
- Bernshtam, A. N. 1963. Gorodishche Sadyr Kurgan. In: *Arkeologicheskie pamiatniki Talasskoi doliny*, pp. 115–123. Frunze: Izd-vo AN Kirg. SSR.
- Burnasheva, R. 1972. Monety Bukharskogo khanstva pri Mangytakh. *Epigrafika Vostoka* 21: 67–80.
- Davidovich, E. A. 1964. *Istoriia monetnogo dela Srednei Azii XVII–XVIII vv (zoloty i serebrianye monety Janidov)*. Dushanbe: Izd-vo AN Tadzh. SSR.
- . 1983. *Istoriia denezhnogo obrashcheniia srednevekovoi Srednei Azii (mednye monety XV-pervoi chetverti XVI v. v Maverannahre)*. Moskva: Izd-vo Nauka.
- Fedorov, M. N. 1974. Politicheskaiia istoriia Karakhanidov v kontse pervoi i vo vtoroi chetverti XI v. *Numizmatika i Epigrafika* 11: 158–178.

3. Equal to about 16,667 silver *tangas* of 4.8 g.

- . 1983. Ocherk istorii Vostochnykh Karakhanidov kontsa X–nachala XIII v. po numizmaticheskim dannym. In: *Kirgiziia pri Karakhanidakh*, pp. 103–140. Frunze: Izd. Ilim.
- . 1991. O tsenakh na nedvizhimoe imushchestvo v Srednei Azii XV–XVI vekov. *Obshchestvennye nauki v Uzbekistane* 12: 46–51.
- . 2000. Farghana. Notes on Qarakhanids and their coinage. *Supplement to ONS Newsletter* 165: 10–12.
- . 2001a. Archeological data for the history of Atbash. *Archäologische Mitteilungen aus Iran and Turan* 33: 391–403.
- . 2001b. The genealogy of the Qarakhanids. *Supplement to ONS Newsletter* 168: 16–33.
- . 2001c. New data on the monetary circulation of mediaeval Uzgend: coins from the Kashka-Terek hillfort. *American Journal of Numismatics* 13: 81–88.
- . 2001d. Qarākhānid coins as a source for the history of Ilaq. *ONS Newsletter* 169: 10–18.
- . 2001e. Qarakhanid rulers with the titles Arslan Tegin and Arslan Ilek. *Supplement to ONS Newsletter* 168: 34–37.
- . 2001f. Qarakhanid rulers with “Tongha titles” (11th century AD). *Supplement to ONS Newsletter* 168: 38–45.
- . 2001g. A Sogdian incense-burner of the late VII–early VIII c. AD from Koshoi Korgon hillfort. *Iranica Antiqua* 36: 361–381.
- Gumilev, L. N. 1967. *Drevnie Tiurki*. Moskva: Izd-vo Nauka.
- Husaini, Sadr ad-Din ‘Ali. 1980. *Akhbar ad-Daulat as-Seldjuqiyya*, Izdanie texta, perevod, vvedenie, primechaniia i prilozheniia Z. M. Buniatova. Moskva: Izd-vo Nauka.
- Istoriia. 1984. *Istoriia Kirghizskoi SSR*. Frunze: Izd-vo AN Kirg. SSR.
- Kliashtornyĭ, S. G. 1983. Novye epigraficheskie raboty v Mongolii (1969–1976). In: *Istoriia i kul’tura Tsentral’noi Azii*. Moskva: Izd-vo Nauka.
- Kochnev, B. 1984. Zametki po srednevekovoi numizmatike Srednei Azii. Chast’ 6. *Istoriia material’noi kul’tury Uzbekistana* 19: 186–205.
- . 1995. Svod nadpisei na karakhanidskikh monetakh: antroponimy i titulatura, 1. *Vostochnoe istoricheskoe istochnikovedenie i spetsial’nye istoricheskie distsipliny* 4: 201–279.
- . 1997. Svod nadpisei na karakhanidskikh monetakh: antroponimy i titulatura 2. *Vostochnoe istoricheskoe istochnikovedenie i spetsial’nye istoricheskie distsipliny* 5: 245–314.
- Masson, M. E. 1957. Istoricheskii etiud po numizmatike Djagataidov. *Trudy Sredneaziatskogo Gos. Universiteta, Novaiia seriia* 111; *Arkheologiia Srednei Azii* 6: 41–108.

Materialy. 1973. *Materialy po istorii kirgizov i Kirgizii*, vyp. 1. Moskva: Izd-vo Nauka.

Smirnova, O. I. 1963. *Katalog monet s gorodishcha Pendzhikent*. Moskva: Izd-vo Nauka.

Death on the Tigris: a Numismatic Analysis of the Decline of the Great Saljuqs

ERIC J. HANNE*

Immediately following the deaths of the Saljuq wazir Nizam al-Mulk (d. 1092), the Saljuq Sultan Malikshah (d. 1092), and the Abbasid Caliph al-Muqtadi (d. 1094), the lands of the Great Saljuqs descended into political and military chaos. This article provides a numismatic analysis of the events surrounding the decline of Saljuq unity, comparing the titular evidence on coins from three cities (Baghdad, Isfahan, Nishapur) during the reign of Barkyaruq b. Malikshah (r. 1094–1105). By incorporating the material evidence of a comparative mint study with textual evidence available, a more accurate depiction of the decentralized nature of the power arena emerges.

In Ramadan 485/October 1092, the Saljuq sultan Malikshah (r. 464–485/1072–1092) and his wazir Nizam al-Mulk were on their way to Baghdad to pay an official visit to the Abbasid caliph al-Muqtadi (r. 467–487/1075–1094). During the journey from Isfahan to Baghdad, Nizam al-Mulk was attacked by members of the “Assassins”, becoming their first and most famous victim. His body was sent on to Baghdad for burial, while Malikshah, having replaced Nizam al-Mulk with the latter’s rival, Taj al-Mulk Abu Ghana’im al-Marzuban, continued his journey. He arrived in Baghdad two weeks after the assassination (Ibn al-Jawzi, *al-Muntaẓam* 16.299; Ibn al-Athir, *al-Kāmil* 8.478–481).¹ The trip is noteworthy not only for the assassination of Nizam al-Mulk, but as an important development in the relations

*Florida Atlantic University, College of Arts and Letters, Department of History, 777 Glades Road, P.O. Box 3091, Boca Raton, Florida 33431.

1. Ibn al-Athir provides a lengthy biography for Nizām al-Mulk at this point in his narrative.

between Malikshah and the Caliphate. During the first three quarters of his reign, the sultan was involved in securing his borders and obtaining recognition of his supremacy among the Saljuqs. Only in the years immediately preceding his visit had Malikshah begun to turn his attention to the Abbasid city, partly as a result of his new connections to the caliph through the marriage, at the caliph's request, of one of his daughters to al-Muqtadi.² Although the marriage only lasted a short time, a child, Abu al-Fadl Ja'far, resulted from this union of the Saljuq and Abbasid households. He was to play a key role in the 485/1092 visit.

The reason for Malikshah's trip to Baghdad became clear soon after his arrival: he ordered al-Muqtadi to quit the city. This demand was immediately rejected by the caliph, and negotiations ensued, ending in an agreement that gave al-Muqtadi ten days to relocate elsewhere. Although the sources do not state it explicitly, it appears as if Malikshah intended to place his grandson Abu al-Fadl Ja'far on the caliphal throne. In the end, the negotiations were for naught, as Malikshah died on "the tenth day", following a brief illness (Ibn al-Jawzi, *al-Muntaẓam* 16.299; Ibn al-Athir, *al-Kāmil* 8.481–484).³ The sudden deaths of Nizam al-Mulk and Malikshah, two of the central Islamic lands' strongest figures, were followed in 487/1094 by the sudden and inexplicable death of the Abbasid caliph al-Muqtadi, setting in motion a series of events that led to the dissolution of Saljuq rule. By the end of the sixth/twelfth century, such other powers as the Abbasids, Khwarazmshahs, and Eldiguzids would replace the Saljuqs, dividing much of the central Islamic lands into a patchwork quilt of small kingdoms.

In the field of medieval Islamic history, any discussion of the Saljuq period—specifically the rise and fall of the Great Saljuqs as well as the emergence of smaller offshoot dynasties in the central Islamic lands—is fraught with various pitfalls, chief among them being the limited number of modern studies of the period. This is not to detract from the works of such noted scholars as Busse, Bosworth, Lambton, and Luther,⁴ for they have laid a strong foundation for the understanding of this period of Islamic history. They provide a working narrative of the political events and cultural developments leading up to and including the Saljuq period, a period in which on the one hand we find the rise of the *madrasa* system, the spread

2. For more on the relationship between the Sultanate and Caliphate at this time see Makdisi (1970; 1975).

3. Ibn al-Athir does mention the details surrounding Malikshah's desire to have al-Muqtadi quit the city in this account.

4. Busse (1969) is a seminal modern work on the Buyid period. Although this study focuses on the sixth/twelfth century, knowledge of the Buyid political and military relations and procedures in the fourth and fifth/tenth and eleventh centuries is helpful in understanding later developments. Bosworth (1968) provides an exhaustive list of political developments for the period in question. Although there is little analysis offered, the work's strength stems from its function as a reliable research tool. Lambton (1988) is just one of

of Islam into Asia Minor, and a renaissance of sorts for the Abbasid Caliphate, and on the other, the devastation wrought by the Crusaders and the eventual onslaught of the Mongols. The task now at hand is to build upon this foundation, filling in gaps and expanding on the relationship between various events and sociopolitical developments.

One area that has been all but ignored in the modern scholarship is the status and role of the Abbasid Caliphate for this period.⁵ Most works have focused on the Saljuqs and other active powerful warrior dynasties, treating the caliphs as negligible figureheads. The Abbasid caliphs of the eleventh and twelfth centuries were not, however, as impotent as depicted. They were dynamic players in that porous political arena. From the reign of al-Qadir billah (r. 381–422/991–1031) onward, the Caliphate experienced a renaissance of political, cultural, and military power and authority. One of the more interesting turning points in the revitalization of the Caliphate is tied to the deaths of Nizam al-Mulk, Malikshah, and al-Muqtadi. Each of them perished in what can be said to be peculiar circumstances. The medieval historians Ibn al-Jawzi, Ibn al-Athir, al-Bundari, and Sibṭ b. al-Jawzi provide the details of these events, focusing on the intricate machinations of the key political players and creating a dense narrative of broken alliances and failed plots.⁶ Although modern scholars have addressed these events in their own studies, few have focused on these deaths and those involved. Carole Hillenbrand is a notable exception, having written a key article that makes a case against the various suspects in the demise of Nizam al-Mulk and Malikshah (Hillenbrand 1995). To date, however, no one has incorporated the material evidence from the period into a study, a gap this article seeks to fill.

The present article emerges from a larger numismatic study that focused on the gold coinage of the central Islamic lands for the years 485–575/1092–1180.⁷ In studying the titular evidence on the dinars minted during this period, the following basic question was the foundation for my analysis: *Whose* name was on what coin from *what* mint during *what* year? The question is important because having one's name on the coinage (and the placement of that name/titlature in

a number of her works, both monographs and articles, on the period on place in question. Luther (1964) is a necessity for understanding the rapidly changing political arena during the final decline of the Saljuqs.

5. My own research has dealt with this matter in greater detail (Hanne 1998; in press).

6. Although I use Ibn al-Jawzi and Ibn al-Athir's works as my core sources, the other two are helpful in supplementing the narrative: al-Bundari, *Zubdat al-nuṣra*; Sibṭ b. al-Jawzi, *Mirāt al-zamān* (covering 480–513 AH).

7. An earlier version of this article was the result of my attendance at the 1996 Graduate Student Seminar held at the American Numismatic Society. I would like to thank the staff of the ANS, in particular Dr. Michael Bates, for their generous assistance and guidance. In addition, I would like to thank Mr. Eric P. Newman for his funding of the Graduate Seminar

relation to other names) is a good indication of the level of one's influence in a given city and its region at that time. The basis for this assumption is what we have come to understand as one of two symbols of authority during the medieval Islamic period: the right of *sikka*.⁸ Modern numismatic studies have shown that from the mid-second / mid-eighth century, the caliphs began having their names struck on the coins, and that by the late third / ninth century, as the Abbasid Caliphate began to deteriorate, local powers began to express their autonomy by having their names placed on the coinage alongside that of the caliphs (Bates 1978a, 1978b, 1979a, 1979b). This expression of minting autonomy is especially helpful in the understanding of such complex political periods as the decline of the Great Saljuqs. To that end, a brief summary of my general conclusions concerning the coinage of this period will be followed by the presentation of a case study surrounding the tumultuous reign of Barkyaruq b. Malikshah (r. 487–498/1094–1105), the goal of which is to highlight the importance of integrating numismatic data into any analysis of the textual record.

A discussion of the methodology used for this study is in order. As mentioned previously, the geographical scope of this work is limited to the central Islamic lands, specifically what is now Iraq, Iran, and parts of Afghanistan and Central Asia. Knowing that during this period historical events and developments were not centered on any one city, but rather took place throughout the region in question, a comparative mint study was needed. The initial focus was on the output of three major cities: Baghdad (struck as *Madinat al-Salām* "City of Peace"), the seat of the Abbasids; Isfahan (struck as *Iṣbahān*), a capital city for a number of Saljuq sultans; and Nishapur (struck as *Nisābūr*), an early power center for the Saljuqs. In order to add further depth to the study, coins from eighteen other mints were included; in terms of the number of coins for each mint, however, the number was less than that from the three "main" mints under discussion.

The reasoning behind a "comparative mint study" becomes clear when one looks at the nature of Islamic numismatic studies for this period thus far. The majority of published works are descriptive in nature, presenting their findings in a reign-based and/or dynasty-based manner. For example, the catalogues of the British Museum (BMSA), the National Library of France (Lavoix 1849–96; Hennequin 1985), and the Turkish collections all present their coins by ruler, including specimens from a variety of mints (Ghalib 1894; Lane-Poole 1897;

series over the years, a philanthropic endeavor that has been appreciated by numerous scholars such as myself. A copy of the original paper, "The Powers that Be: Islamic Numismatics of the 11th and 12th Century" may be found in the files of the American Numismatic Society.

8. The other sign of authority being the *khuṭba*, having one's name read in the Friday sermon.

Artuk and Artuk 1970–74). This chronological method might be the easiest and most logical way to present the materials without undue confusion; in using these catalogues, however, we need to provide a clearer context for the coins. With regard to the period in question, the assumption that a ruler had the same level of influence during the given period of his reign in every part of the empire allotted to him is untenable. The logic of a reign-based presentation of numismatic evidence dictates that only coins with a specific ruler's name will be presented, and other contemporary coins, with other individuals on them, may be located elsewhere and could possibly be overlooked.⁹ Alternatively, dynasty-based studies have been produced, most notably by Nicholas Lowick in his study of Saljuq coins from the central Islamic lands (Lowick 1970). Lowick's study covers the coins of the Great Saljuqs as well as the smaller dynasties of the Saljuqs of Iraq and Kirman, providing a descriptive study of coins held by the British Museum. In both forms of study, however, no effort is made to integrate this material evidence into a larger study of the historical events of a given period or area.

In addressing these gaps, some numismatists have taken to providing single-mint studies, focusing solely on the issues of one mint during its period of operation. This method downplays the political division of issues, and centers its efforts on presenting a chronological list of successive types over time. Examples of the single-mint-based study include G. C. Miles's *Numismatic History of Rayy* and S. Stern's work on the coinage of 'Amul, both of which present their findings in a historical context, highlighting changes in type and anomalous issues as they occur (Miles 1938; Stern 1967). What results is a richly detailed study of an individual city's numismatic history, the usefulness of which cannot be denied for a true understanding of that city's overall history. This form of numismatic presentation, however, has inherent limitations. A clearer view of a specific locality is obtained, but extrapolating these findings in order to apply them to other locales, as will be seen, can be quite dangerous.

The above-mentioned reign-based, dynasty-based, and single-mint-based works should by no means be ignored, for the reasons given. By combining the best of the three forms of study in what may be termed a comparative-mint study, however, the material evidence may be more effectively used in conjunction with the textual evidence. This approach attempts to create a list of types as complete and chronologically ordered as possible for a given mint for the period in question, cognizant of the fact that multiple types may be minted at a given city at the same time. The list of types is then placed next to other contemporaneous

9. In all fairness to the works mentioned regarding this point, the aim of the works was not to present an analytical discussion of the coins, but rather to present the holdings of their respective cabinets. My point is that one should avoid following a similar format in analyzing the coins.

lists from other mints. In so doing, we are able to study the changes occurring in a specific mint in relation to contemporary issues from other mints. The number and choice of mints to be included in the study is vital,¹⁰ depending both on the historical context with which one is dealing, as well as the amount of time one has to conduct the study. In addition, the number of coins with which one has to work is important. Often in this period, one may find only a few specimens from a given mint, and although certain conclusions may be reached with these coins, the strength of said conclusions will, to an extent, be proportional to the amount of evidence one may offer in support.

For the larger study, I gathered evidence from approximately five hundred dinars, including field and marginal legends from both the obverses and reverses. Dinars are the focus of this work, not out of choice, but rather out of necessity. Nicholas Lowick, in his article on Saljuq coinage, refers to numerous studies demonstrating the dearth of silver coins (dirhams) for this period (Lowick 1970: 242n5). Material from the coins found in the collection of the American Numismatic Society account for around one hundred and forty specimens. The rest of the material was gathered from a variety of other sources, most notably the catalogues of the British, French, and Turkish museums. In addition, the notes of G. C. Miles, Michael Bates, and Stephen Album, which include a number of coins not mentioned in the published works, were studied (Album et al. n.d.). I am not working under the illusion that the material gathered is the sum total of all the specimens extant today, but I have structured this study so that further coins may be added to the findings and incorporated into the overall conclusions. Although a work in progress, the foundation has been laid in this article, and will be built upon in subsequent studies.¹¹

The avenue chosen to discuss the material evidence relates to the right of *sikka* and the titular evidence on these gold coins. Having obtained as much data as possible for each coin (die axis, weight, etc.), in addition to that found in the legends, I created a list of types. For the purposes of this work, a difference in type is defined as any change in the content of the legend, or a change in the

10. The length of time one chooses to study is also quite important. The beginning date of the larger study coincided with a series of pivotal events: the deaths of the Nizam al-Mulk and the Saljuq sultan Malikshah in 485/1092, followed soon after by the death of al-Muqtadi in 487/1094. The ending date for the larger project coincides with the beginning of the Abbasid caliph al-Nasir li-Din Allah's long, dynamic reign (575-622/1180-1225). Inclusion of al-Nasir's period in this study would have brought too many other complex developments with regard to the political and cultural climate of the day into the picture.

11. I have recently conducted research on the coinage from 381-485/991-1092, focusing on reigns of the caliphs al-Qadir, al-Qa'im, and al-Muqtadi. I am currently beginning work on bringing this data into a single monograph-length study of the coinage of the fifth-sixth/eleventh-twelfth centuries.

arrangement of the individuals in the legend. I noted minor changes such as the presence or absence of ornamentation and the like, but did not associate them with a “new type”. The lists of types for each of these three mints were then placed together in tabular form in order to compare contemporary issues. For this article, I provide an abbreviated table (Table 1) for the era before and during Barkyaruq b. Malikshah’s reign (487–498/1094–1105). This abbreviated table shows that there were seven different types for Baghdad from 485–498/1092–1105, while Isfahan had fifteen different types, and Nishapur nine.¹²

A word or two of explanation for this table is in order, so that there is no confusion as to how the table should be read and understood. To the far left, there is a vertical column for the date, given in Hijra years from 485 to 498. The uppermost horizontal section of the first page lists the three major mints studied: Baghdad, Isfahan, and Nishapur. Each mint’s column is divided into two cells, one for the obverse data and the second for material found on the reverse. The material included in these entries, however, is not *all* the inscribed material to be found on the coin. The standard dinar for this period has the following on the obverse: the first part of the modified Islamic creed (*shahādah*), which reads, “There is no god but Allah, Unique, He has no Partner”; and the name of the caliph, in some cases the full *laqab* (honorific title), such as “al-Mustazhir billah” and in others the shortened form, “al-Mustazhir”. In addition, there are two marginal inscriptions, the interior one devoted to what may be termed the “Bismillah mint and date formula”, in which the inscription reads: “In the name of God this dinar was struck in ‘x’ in the year ‘y’”, with the year written out in words, as is standard for this time. The exterior margin, sometimes set off from the interior one by a lined or dotted ring, has the Qur’anic passage from Sura 30, verses 3–4,¹³ again a standard fixture for all gold coins for this period. The reverse of the coins includes the following: the second part of the Islamic *shahādah*, reading “Muhammad is the Messenger of God, may God praise him”; the names and honorific titles of the hierarchy of sultans and amirs in power; and in the marginal inscription, the Qur’anic passage from Sura 9, verse 33.¹⁴ An example of a standard Baghdad coin (BMSA 3 no. 65, plate 3) dating from 487/1094 follows:

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المستظهر بالله / امير المؤمنين
Internal margin: بسم الله ضرب هذا الدينار بمدينة السلام في سنة سبع و ثمنين و
 اربعمائه

12. The longer, complete table from my larger study has twenty-two types for Baghdad, forty-five for Isfahan, and twenty-four for Nishapur.

13. Qur’an 30:3–4: “To God belongs the order before and after; and in that day the believers shall rejoice in the help of God.”

14. Qur’an 9:33: “Muhammad is the Messenger of God sent with guidance and the religion of truth, to make it prevail over every other religion, averse though the idolaters may be.”

Table 1. Comparative Types

Table 1. Comparative Types					
Date (AH)	Baghdad	Işfahān	Nishāpūr		
	Obv	Rev	Obv	Rev	
485	IMLAM al-Muqtadi	Jalāl al-Dawla Malik Shāh E: Rukn al-Dīn W: Abū al-‘Abbās	N: ‘Adl al-Muqtadi	N: Zafīr al-Sultān al-Mu‘azzam Mu‘izz al-Dunyā wa al-Dīn Abū al-Fatḥ Malikshāh	al-Sultān al- Mu‘azzam Rukn al-Islām Abū al- Fatḥ Malikshāh b. Muḥammad
			N: ‘Adl al-Muqtadi	Mu‘izz al-Dunyā wa al-Dīn Malikshāh	
486			N: Fatḥ al-Muqtadi al-Sultān al-Mu‘azzam Maḥmūd b. MS	Il-Arslān al-Sultān al-A‘zam Muḥī al-Dunyā wa al-Dīn Ismā‘īl b. ‘Alī Sungur Bek	al-Sultān al- Mu‘azzam Malik al- Islām Arslān Arghūn
	IMLAM al-Muqtadi	E: Dhukhr al-Dīn W: Abū al-‘Abbās	N: Fatḥ al-Muqtadi al-Sultān al-Mu‘azzam Maḥmūd b. MS E: Nāṣir al-Dunyā W: wa al-Dīn	Alp Aslān al-Sultān al-A‘zam Muḥī al-Dunyā wa al-Dīn Ismā‘īl b. ‘Alī Sungur Bek	al-Sultān al- Mu‘azzam Malik al-Islām Abū al- Muzaḥfar Barkyāruq b. MS
			Barkyāruq al-Muqtadi al-Sultān al-Mu‘azzam Rukn al-Dunyā wa al- Dīn Abū al-Muzaḥfar	Abū Qasim al-Sultān al- Mu‘azzam Nāṣir al-Dunyā wa al-Dīn Maḥmūd b. MS	
			Barkyāruq al-Muqtadi al-Sultān al-Mu‘azzam Rukn al-Dunyā wa al- Dīn Abū al-Muzaḥfar	N: Ornament al-Sultān al- Mu‘azzam Nāṣir al-Dunyā wa al-Dīn Abū Qasim Maḥmūd b. MS	

Date (AH)	Baghdad		Iṣḥān		Nishāpūr	
	Obv	Rev	Obv	Rev	Obv	Rev
488	IMLAM al-Mustazhir	Mu'izz al-Dawla al- Qāhira Barkyāruq E: 'Umdat al-Dīn W: Abū Maṣṣūr	al-Mustazhir Amir al- Mu'minin	al-Sultān al-Mu'azzam Rukn al-Dunyā wa al-Dīn Malik al-Islām wa al-Muslimin Abū al-Muzaḥḥar Barkyāruq E: Mu'izz W: al-Dawla	al-Mustazhir Arslān Arghūn Muḥammad E: al-Malik W: -----	al-Sultān al- Mu'azzam Malik al- Islām Abū Muzaḥḥar Barkyāruq b. MS
489	IMLAM al-Mustazhir	'Aḍud al-Dawla al- Qāhira Barkyāruq E: 'Umdat al-Dīn W: Abū Maṣṣūr	al-Mustazhir Amir al- Mu'minin	al-Sultān al-Mu'azzam Rukn al-Dunyā wa al-Dīn Malik al-Islām wa al-Muslimin Abū al-Muzaḥḥar Barkyāruq		
490			N: Faṭḥ al-Mustazhir [Amir al- Mu'minin]	N: Malik al-Sultān al- Mu'azzam Rukn al-Dunyā wa al-Dīn Abū al-Muzaḥḥar Barkyāruq S: al-Islām		
491	[IMLAM al- Mustazhir]	['Imād al-Dawla al- Qāhira Barkyāruq E: 'Umdat al-Dīn W: Abū Maṣṣūr]	al-Mustazhir	Barkyāruq al-Sultān al-Mu'az- zam Abū al-Muzaḥḥar E: Rukn al-Dunyā W: wa al-Dīn	al-Imām al- Mustazhir	al-Sultān al- Mu'azzam Shahānshāh Barkyāruq al-Malik al--- al-Dawla Sanjar b. MS
492						

Date (AH)	Baghdad	Iṣfahān	Nishāpūr
	Obv	Rev	Obv
493			
		N: Nāṣir al-Mustaẓhir	al-Imām al-Mustaẓhir
		al-Mustaẓhir	Mustaẓhir
			E: Nāṣir
			W: al-Dīn
		al-Sultān [Muḥammad] [Abu Shujā'] Mu'azzam E: Ghiyāth W: al-Dīn	al-Sultān al-Mu'azzam Ghiyāth al-Dunyā wa al-Dīn Abū Shujā' Muḥammad al-Malik al-Muzaḥḥar Sanjar
494			
495	IMLAM al-Mustaẓhir	N: 'Adl al-Mustaẓhir	al-Imām al-Mustaẓhir
	Ghiyāth al-Dunyā wa al-Dīn Muḥammad	[al-Sultān al-Mu'azzam Ghiyāth al-Dunyā wa al-Dīn Muḥammad]	al-Sultān al-Mu'azzam Abū Shujā' Muḥammad al-Malik al-Muzaḥḥar Sanjar
496			
			al-Mustaẓhir
			E: Nāṣir
			W: al-Dīn
497			
498	IMLAM al-Mustaẓhir	N: Nāṣir al-Sultān al-Mu'azzam	Malik al-Islām Abū Shujā' Muḥammad wa al-Muslimin
	E: Ornament	Ghiyāth al-Dunyā wa al-Dīn	
	W: Ornament	Abū Shujā' Muḥammad	
		E: wa al-Muslimin	E: Ghiyāth al-Dunyā
		W: al-Islām	W: wa al-Dīn

Key: "IMLAM": al-Imām-Laqaḥ-Amir al-Mu'minin, "MS": Malik Shah (485/1092), "----": Illegible writing, "[....]": Probable reading, "___": Separates types within same year, "N/S/E/W": Designates placement in field.

External margin: Q 30: 3-4: لله الامر من قبل و من بعد يومئذ يغفر للمؤمنون بنصر الله

Rev.: لله / محمد رسول الله / صلى الله عليه / معز الدولة / القاهرة / بركيارق

Margin: Q 9: 33: هو الذي ارسل رسوله الهدى و الدين الحق ليظهره على الدين كله ولو كره المشركون

For the list of types in the table, I only include the titular evidence for the coins. Other inscriptions on the coins are mentioned only if there are major changes or breaks from the standard type. It should also be stressed that the order in which the titular evidence is given in Table 1 is the order in which it appears on the types (and thus the individual coins) themselves. It is also important to emphasize that each entry for a given mint during a given year does not necessarily correspond to an individual coin, but rather to a series of coins of similar type as defined above. For example, if we look at dinars minted in Baghdad in 487/1094 using Table 1, we find the following entry:

Date (AH)	Baghdad	
	Obv	Rev
487	IMLAM al-Mustazhir	Mu'izz al-Dawla al-Qahira Barkyaruq

This entry should be read to mean that the titular evidence on the obverse includes the term “al-Imām”, almost invariably found in the north of the field; the caliph’s *laqab*, al-Mustazhir billah; followed by the title, Amir al-Mu’minin—all represented by the acronym IMLAM in the table. On the reverse, the titular evidence includes an honorific title for Barkyaruq, Mu’izz al-Dawla al-Qahira, and then Barkyaruq’s name. This type from Baghdad can be found in coins from both 487/1094 and 488/1095. A new type minted in Baghdad in 488/1095 then appears, which, in addition to the above material, includes to the right and left of the reverse field the words ‘Umdat al-Din and Abu Mansur. Another type, beginning in 488/1095, changes Barkyaruq’s honorific title from “Mu’izz al-Dawla al-Qahira” to “Adud al-Dawla al-Qahira.” The first type mentioned starting in 487/1094 is represented by five coins, four from 487/1094 and one from 488/1095.¹⁵ The succeeding type, similar to the first except for the addition of lateral legends on the reverse, is found on seven coins, all dated to 488/1095.¹⁶ The next type, with

15. Coins 1-4, respectively: *BMSA* no. 65, 3, Pl. 2; Tewhid: no. 88 pl. 42; Artuk and Artuk 1970-74: no. 1051; Hennequin 1985 no. 85/101, V, 1978.08. The fifth coin (*GDC* no. 1315) was, according to Miles’ notes, struck in 488/1095 and could have been struck prior to Barkyaruq choosing Abu Manşūr as his *wali al-ahd*. Miles cites *BMSA* no. 65 as a similar coin to this.

16. Hennequin 1985 no. 86/102, V, M.605; *BMSA* no. 65c, 9, pl. 15; G. C. Miles notes, E.P.

the change of *laqab* for Barkyaruq, is seen on at least twenty coins, dating from 488–494/1095–1100. Thus, each entry in Table 1 may represent anywhere from one coin to quite a number of examples.

Two more comments should be made with regard to understanding the data presented in Table 1. The first relates to the separation of types. As is noted in the key to the table, a bold line across the obverse and reverse cells denotes a change in type within a single year. Furthermore, when a new type appears at the beginning of a new year, this also denotes a change in type. The exact dating of these changes is at the moment undetermined. Further research into the textual sources may bring more precision to the dating of these types. A second issue is closely related to the first, regarding the changeover of types. When there are numerous types in one year, they have been placed in chronological order as much as possible, based on evidence found in the textual sources. We should also keep in mind that it is possible that two or more types circulated at the same time. This ordering of types within a year is preliminary, and can be modified should new textual or material evidence require it. Similarly, one will note that there are blank spaces throughout the table. Most notably, this applies to Baghdad types. The blank spaces do not mean that there are no coins exhibiting the characteristics of the type in question, only that none are yet known to me. The blank spaces, however they may be read, should not detract from the table's findings. Table 1 reflects the research conducted thus far, and is quite capable of integrating future finds.

GENERAL CONCLUSIONS

The comparative mint study has provided a number of interesting insights into the coinage of this period as well as its historical events. The first major conclusion is that there was no central control of the coinage during the sixth/twelfth century. As we can see from abbreviated Table 1, in the short span of thirteen years a tremendous variety of types appeared throughout the area in question. Numerous differences are seen in the legends of coins from mint to mint. Not only are there differences in the information included in the legends, but the very appearance of the legends themselves (i.e., their epigraphy) differs vastly. Certain trends for the various mints can be discerned, trends which tell much about the history of the period. The decentralized nature of mint output should come as no great surprise following the division of Abbasid lands starting in the third/ninth century. By the advent of the Saljuqs into the central Islamic lands in the fifth/eleventh century, the region had become a patchwork quilt of spheres of influence, which often changed hands from generation to generation.

Newman collection; PSA: 53; Siouffie, ANS: 26; ANS 1966.205.10 (questionable reading); ANS 1972.288.105.

Baghdad, the seat of the Abbasid Caliphate, exhibits a unique and static type (except for names of rulers) for its dinars following the deaths of Nizam al-Mulk and Malikshah. The following coin is an example of this "Baghdad standard":

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المستظهر بالله / امير المؤمنين

Internal margin: Bismillah, mint, and date

Rev.: لله / محمد رسول الله / صلى الله عليه / غياث الدنيا / و الدين محمد

Left field: ابو منصور

Right field: ... الد

Margin: Q 9: 33

The description is based on an ANS dinar from 498/1105 (1964.81.6, 3.67 g). On the obverse, the title "al-Imam" is followed by the first part of the Islamic creed. The full name of the reigning caliph, with the title "Amir al-Mu'minin" makes up the last part of the field legend. The marginal inscriptions are typical, the interior one informing the reader of the date and city of minting, and the outer margin containing, Qur'an 30:3-4.¹⁷ The reverse includes the second part of the *shahādah*, followed by the titulature referring to Muhammad b. Malikshah, Barkyaruq's half-brother, rival, and eventual successor to the Saljuq sultanate. The reverse margin carries Qur'an 9:33 as usual. Furthermore, there are lateral legends identifying the sworn successor of the caliph.

This division of information on the obverse and reverse, where one finds the mentioning of the caliph on the obverse and that of other powers on the reverse, was to remain the standard for coins minted in Baghdad during this period. The only real difference one comes across is either the addition or deletion of lateral legends, generally denoting the *wali al-'ahd* ("heir-apparent"), or the change in the name when one of the figures is replaced by a successor. In terms of a "delayed reaction" in seeing a new figure named on the coinage, the change appears to have occurred on a timely basis. Again, the only time change is truly noticeable is when there has been a succession to either the Caliphate or the Sultanate. In addition, one finds little if any ornamentation on the coins, something that cannot be said for coins from other mint cities.

What is important to note about these coins, however, is what they do not include. Up until Malikshah's reign, Saljuq royal titles were found as standard elements of the legends of Baghdad's gold coinage. Coins minted during the reigns of Tughril Bek and Alp Arslan were often filled with a variety of royal titles, but during the reign of Malikshah, this practice began to change,¹⁸ possibly as a result

17. Although the outer margin is clipped in the coin presented, evidence shows the existence of the standard Qur'anic passage.

18. For the reign of Tughril Bek, the ANS has three coins (ANS 1964.175.5, 1964.78.3, 1976.37.1) that use such titles as "Glorified Sultan" and "King of Kings" when referring

of the Abbasid takeover of the Baghdad mint (*dār al-ḍarb*) which, according to Ibn al-Athir, took place in 462/1069–70 (Ibn al-Athir, *al-Kāmil* 8.384).¹⁹ The change in policy concerning Saljuq royal titulature was neither drastic or immediate after Abbasid officials began running the Baghdad mint in 462/1069–1070, but by the end of Malikshah's reign, we no longer find royal titles accompanying the names of Saljuq rulers.²⁰ After 485/1092, the only royal title to appear on Baghdadi dinars is that of the caliph. Although the name and *laqab* of a given Saljuq are listed, "royal" terms like "Shahanshah" ("King of Kings"), "al-Sultan al-Mu'azzam" ("Glorified Sultan"), "al-Sultan al-A'zam" ("Supreme Sultan"), or "Malik al-Islam wa-l-Muslimin" ("King of Islam and the Muslims") are absent. This absence may seem minor at first, but when compared to other mints' outputs, where a vast array of royal titles is normal, this aspect of Baghdad's gold coinage becomes more telling. Furthermore, when viewing the coinage in conjunction with the historical events of the period in question, one could see this change as a sign of increasing caliphal power.

This impression is strengthened when one observes the gradual change in types from the mid-sixth/mid-twelfth century onward, after the reign of Barkyaruq, a period that I cover in my original thesis project. By this time, the Saljuqs have been left off the Baghdad coinage entirely. The obverse mentions the caliph "in full" as usual, while the reverse is devoted solely to the second part of the Muslim creed. The following ANS coin (ANS 1965.270.24, 2.178 g) is typical of this development:

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المستظهر بالله / امير المؤمنين

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3–4

Rev.: لله / محمد رسول الله / صلى الله عليه

Margin: Q 9: 33

As one can see, the standard titulature for the caliph on the obverse is unchanged, as are the marginal legends. The main difference is on the reverse, where the main field legend is only the sentence, "Muhammad is the Messenger of God, May God praise him". The coin is dated 561/1165; from then on, coins minted in Baghdad

to the Saljuq sultan. For Alp Arslan's reign, similar titulature is apparent in addition to references to the "King of the Arabs and 'Ajam." (Henneqin 1985: 49 no. 55, 40–41.) I have found no Baghdad specimens from Malikshah's reign that include royal titles.

19. "And [in this year] the *dār al-ḍarb* for *dinārs* came in to the hands of the agents (*wukalā'*) of the caliph." The reason given for the handover of control was the spread of counterfeit Saljuq dies throughout the populace. Ibn al-Jawzi does not mention this development anywhere in his account for this year.

20. A dinar dating from either 465 or 467 AH refers to Malikshah as "Glorified Sultan" on the reverse: *BMSA* 12.

only mention the caliph's name and titlature, and that of the designated successor if there is one. An earlier example of the omission of the sultan's name occurred in 548/1153. The British Museum has a silver dirham, dated 548/1153,²¹ which lists the reigning caliph, al-Muqtafi, on the obverse, while the reverse includes lateral legends naming the current heir apparent, "Abu al-Muzaffar, 'Uddat al-Dunya":²²

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المفتي لامر الله / امير المؤمنين

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: الدين / محمد رسول الله / صلى الله عليه

Left field: ابو المظفر

Right field: عدة الدنيا

Margin: Q 9: 33

What is interesting about this situation is that gold coins were still being minted with the names of the current sultans:

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المفتي لامر الله / امير المؤمنين

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: لله / محمد رسول الله / صلى الله عليه / معز الدنيا / و الدين سنجر

Left field: ابو المظفر

Right field: عدة الدنيا و الدين

Margin: Q 9: 33

This dinar is from the Paris cabinet and dated 548/1153, the same year as the dirham above (Hennequin 1985: 111/142 E. 1941, 5, p. 98, pl. 4, 3.34 g). On the obverse field, the standard titlature for the caliph is used, but on the reverse the *laqab*, "Mu'izz al-Dunya wa-l-Din," for the reigning sultan, Sanjar b. Malikshah, appears. One explanation for the difference in legends could be the denominations. Silver coins may have been used on a more local basis, thus allowing for a greater degree of autonomy. The difficulty is that few dirhams from this period are extant, which precludes more general conclusions about different denominations. In any case, from 561/1165 onward, the caliphs of Baghdad continued to mint coins in the standard Baghdad fashion, independently of the sultans.

Issues from other mints exhibit several different characteristics in contrast to the coinage of Baghdad. The greatest difference is that non-Baghdad coins show

21. BMSA no. 478t, p. 83, 9, (pl. 4) 41 grains. What is even more interesting about this coin is its denomination. During the period in question, few if any silver coins were minted due to a severe silver shortage. It is uncommon to come across extant silver or copper coins for the sixth/twelfth century.

22. Referring, in my estimation, to the next caliph, al-Mustanjid.

a tremendous amount of variety among the issues of a single city. The obverse typically will include the first part of the Muslim creed, the caliph's name, and marginal inscriptions as on the gold coins of Baghdad, but unlike Baghdad, however, the content was not static. In some cases, the caliph's title is abbreviated; the legend, for example, simply reading "al-Mustazhir" instead of "al-Mustazhir billah":

Obv.: بالله / لا اله الا / الله وحده / لا شريك له / المستظهر

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: الله / محمد رسول الله / السط[ان] المعظم / شاهانشاه / غياث الدين / ابو شجاع محمد

Margin: Q 9: 33

The above ANS coin, dated 504/1110, was minted in Isfahan and exhibits a number of the traits seen on coins minted outside Baghdad (ANS 1965.159.7, 3.68 g). On the obverse the caliph is mentioned, but in an abbreviated form, without the terms "al-Imam" and "Amir al-Mu'minin". On the reverse, the reigning sultan's titles and honorifics are mentioned: "Glorified Sultan", followed by "Shahanshah" and then Muhammad b. Malikshah's *laqab*, *kunya*, and *ism*,²³ "Ghiyath al-Din, Abu Shuja' Muhammad". The use of the Persian title "Shahanshah" is not uncommon in coins from this period, testament to the influence of the Persian royal traditions.

Not only are there differences in the information included in the legends, but the very appearance of the legends themselves (i.e., epigraphy) differs vastly. It is interesting to note the calligraphy on the obverse field legend of many of these non-Baghdadi coins. The *lām-alif* (لا) construct in the *shahādah* portion of the legend is a prime area in which die engravers exhibited their craftsmanship, but this sort of calligraphic variation is seen in other parts of the field inscriptions and the marginal legends. Ornamentation, as well, is not uncommon in many coins struck outside of Baghdad. Floral patterns in place of lateral legends, and in some cases, depictions of swords and axes, are found on many coins. Nishapur dinars, especially, exhibit this use of ornamentation, particularly at the top of the obverse field. The Nishapuri floral pattern is encountered so many times on coins minted in Nishapur that one could place a coin in Nishapur with some confidence, given the presence of this ornamentation.

The variations on the coins, however, do not end with epigraphic style and ornamentation. In a number of coins, there are clear breaks with the standard legend content, in the field legend, or the margins. One such example comes from al-Ahwaz, a mint city located southwest of Isfahan:

Obv.: لا اله الا / الله وحده / لا شريك له / المستظهر بالله

23. Patronymic name, often given to the child at birth.

Left field: بر كيارق

Right field: ...مح

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: قل هو / الله احد الله / الصمد لم يلد و / لم يولد و لم له كفوا احد

Margin: Q 9: 33

The British Museum coin above is dated to 491/1097 (*BMSA* 66^d, p. 278, 9 pl. 15). On the obverse, both the reigning caliph, al-Mustazhir billah, and the reigning sultan, Barkyaruq, are named. On the reverse, however, the Qur'anic passage from Sura 112, verses 1-4²⁴ replaces the typical reference to Muhammad. What is interesting about this reverse legend is its anachronism. According to Miles (1975) this field legend was used on Umayyad coins up until the Abbasids came to power, when in 132/750 it was abandoned and replaced with the standard one naming Muhammad as the Messenger of God. These variations in the field and marginal legends are most frequent on the coins of Balkh.²⁵

When one takes the variety of ornamentation and epigraphy together with the data that can be found on the abbreviated Table 1, it is clear that the mints outside of Baghdad changed their types more frequently. Table 1 does not include information from the eighteen other mints, but the pattern of changing types is similar there. This instability at the mints outside of Baghdad is a result of the chaos that came after the death of Malikshah. As rulers came and went, they minted coins in their *own* names in the cities they controlled. Regardless of the various names, *laqabs*, or other legends on these coins, however, one always finds the current caliph's name present as well.²⁶ Can we view this as testament to the level of Abbasid power? The answer to this question depends on how we define "power", and whether this definition would include the concepts of authority,

24. "Say: He is God, alone, God is Eternal, He begets not and is not begotten, nor is there like unto Him anyone."

25. The Balkh coins for this study, dating from 489/1095 up until the first quarter of the sixth/twelfth century, are truly a wonder to behold. Both the ornamentation and the legends are examples of extraordinary craftsmanship; it deserves a study all to itself. Here is a short list of the most notable examples I came across: ANS 1927.179.74 (494 AH), Hennequin 1985 nos. 119/151, 1974.1178 ([4]9x AH), V, pp. 102-103 and 107/138, M.611 (5xx AH), V, pp. 93-94. One last coin, dated to circa 515 AH from Balkh is held in the collection of the ANS (1979.213.1, 2.330 g, very much alloyed). This one I have dubbed the "honeycomb type" due to the exquisite honeycomb image on the reverse field. The legend material is interspersed throughout the walls of the honeycomb in a masterful art of engraving.

26. I have noted, however, that in 517 AH there is an Isfahani type with no caliph listed; other types from the same year have the caliph al-Mustarshid mentioned.

influence, or tradition. What should be noted, however, is that the presence of the caliphs' names on the coinage was a constant throughout the region; the inherent psychological effect of this on the populace should not be ignored.

THE REIGN OF BARKYARUQ (487–498/1094–1105)

The period covered in my larger essay was approximately ninety years, from the end of the fifth/eleventh century to that of the sixth/twelfth century, but this entire period cannot be treated in a single article. The reign of Barkyarūq, immediately following the deaths of Nizam al-Mulk and Malikshah, provides a clear example of the usefulness of numismatic analysis. The first place to start this discussion would be the source for our reign dates, namely the works of Lane-Poole and Zambaur (Lane-Poole 1894; Zambaur 1927, 1968). It is interesting to note that the works in the field that focus on the creation of reign chronologies were conducted by numismatists—scholars who, it would appear, had a unique perspective on the subject. Modern historians often base their chronologies on the textual record, placing the end-date of a particular ruler's reign with their death. Although a useful method, a different picture emerges when one incorporates the material evidence. In many cases, the coinage shows that although a particular ruler may have died in a particular year, his "reign" may have ended much earlier judged by the right of *sikka*. This holds true for both the reigns of individuals or the changeover from one dynasty to the next. The clearest example of this involves the changeover from the Great Saljuqs (446–512/1055–1118) to the Saljuqs of Iraq (512–590/1118–1194). Based on the material evidence I am presenting, a strong case can be made to change these dates, placing the end of the Great Saljuqs with the death of Malikshah in 485/1092. As will be argued, the coinage after 485/1092 shows that Malikshah's successors were not generally recognized within his realm, and that the Great Saljuqs effectively ceased to exist as a single entity following the reign of their third sultan.

The first Saljuq sultan was Tughril Bek (r. 446–454/1055–1063), who defeated the Ghaznavids at Nishapur in 429/1038 and then definitively at the battle of Dandanqan in 431/1040. However, it was not until Tughril Bek's investiture as sultan by the Abbasid caliph al-Qa'im in 446/1055 that the Great Saljuq empire is said to have begun. Tughril Bek was followed as sultan by his nephew, Alp Arslan b. Chaghri Bek (r. 454–465/1063–1072). Alp Arslan is mainly known for his victory over the Byzantines at the battle of Manzikert in 463/1071, an event that opened Asia Minor to the Central Asian Turks, many of whom would become part of the Saljuqs of the Rum dynasty. Alp Arslan is also known for having as his wazir the famous Nizam al-Mulk, whose death was recounted at the beginning of this article.

Nizam al-Mulk, the celebrated founder of numerous madrasas and the author

of the *Siyāsatnāme* ("Book of the Rules of Governing"), was a strong and stable fixture in the courts of Alp Arslan and his successor Malikshah (r. 465–485/1072–1092). This wazir was not only able to affect the lives of those around him, but through his patronage was able to form an influential faction, the *Nizāmiyya*, scholars and officials who were "brought up" by the influential wazir, and who would play a crucial role in later political developments. Malikshah's reign has been seen as a period of security and strength for the Great Saljuqs. Things began to change, however, near the end of Malikshah's reign, beyond what was discussed at the beginning of this article. Chafing under the tutelage of his father's wazir, Nizam al-Mulk, Malikshah is believed to have attempted to become more independent. Questions have arisen regarding his view of the Caliphate, and whether he planned an attempt to abolish it once and for all. Similar conspiracy-minded questions have arisen with regard to his role in the death of Nizam al-Mulk (Sibt b. al-Jawzi, *Mir'āt al-zamān* 20a-b).

In 485/1092, Nizari Isma'ilis (the "Assassins") succeeded in killing Nizam al-Mulk, who was succeeded by his rival Taj al-Mulk, while the *Nizāmiyya* were persecuted, a number of them eventually settling in Isfahan (Ibn al-Athir, *Kāmil* 8.485; Ibn al-Jawzi, *Muntaẓam* 16.301; al-Bundari, *Zubdat al-nuṣra* 81–84; Sibt b. al-Jawzi, *Mir'āt al-zamān* 32a).²⁷ What Malikshah was going to do about his new wazir or the Abbasid caliph became a moot point, however, because he died at the end of the same year. As the historians relate, following his return from a hunting trip, Malikshah ate some bad food and developed a raging fever. He survived for a few days, deathly ill, eventually succumbing to the fever. He left behind him Turkan Khatun, his favored wife, and their four-year-old son Mahmud. He also left behind his wife Zubayda Khatun and *their* son, twelve-year-old Barkyaruq, as well as two other sons, Sanjar and Muhammad, by Safariyya Khatun. Each of these sons would eventually reign as a Saljuq sultan, although, as will be seen, not without conflict.

It would be best to begin the numismatic analysis of Barkyaruq's reign by presenting four coins:

Obv.: لا اله الا الله / وحده لا شريك له / الإمام المقتضي / بامر الله امير / المؤمنين

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3–4

Rev.: الله / محمد / رسول الله / صلى الله عليه

Left field: ابو العباس

Right field: ذكر الدين

27. al-Bundari provides a lengthy discussion in one section dealing with the events from the death of Nizam al-Mulk and Malikshah to the rise of Barkyaruq to the Sultanate.

Margin: Q 9: 33

Obv.: بركيار ق / لا اله الا الله / المقتضي بامر الله / السلطان المعظم / ركن الدنيا و الدين
[ابو المظفر]

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: ابو القسم / محمد رسول الله / السلطان المعظم / ناصر الدنيا و الدين / محمود بن
ملكشاه

Margin: Q 9: 33

Obv.: فتح / لا اله الا الله / المقتضي بامر الله / السلطان المعظم / محمود بن ملكشاه

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: ايل ارسلان / محمد رسول الله / السلطان الاعظم / محي الدنيا و الدين / اسميل
بن [علي] / سنقر نك

Margin: Q 9: 33

Obv.: لله / لا اله الا / الله وحده / لا شريك له / المقتضي بامر الله

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: محمد رسول الله / السلطان المعظم / ركن الدنيا و الدين / ملك الإسلام / و المسلمين
ابو / المظفر

Left field: بن الملكشاه

Right field: بر كيارق

Margin: Q 9: 33

The first coin, from the British Museum collection, was minted in Baghdad (BMSA 62^d 9). On the obverse is found the standard Baghdad type with the full caliphal protocol for the reigning caliph, al-Muqtadi. On the reverse, only the second part of the Islamic creed was inscribed in the field, with the lateral legends reading Dhukhr al-Din, Abu al-'Abbas. No sultanic titles or names are on this coin.

The second coin, minted in Isfahan, has several names on the obverse (ANS 1922.211.126). The first name, listed at the top of the field, is that of Barkyaruq, followed in the center of the field by that of the caliph al-Muqtadi. A royal title, "Glorified Sultan" (*al-sultān al-mu'zzaam*), follows, along with the *laqab*, "Rukn al-Dunya wa-l-Din". The *kunya*, Abu al-Muzaffar, is then listed in the south part of the field, referring to Barkyaruq. On the reverse, another *kunya*, Abu al-Qasim, is listed, followed by "Glorified Sultan". The *laqab*, Nasir al-Dunya wa-l-Din, referring to the name that follows, Mahmud b. Malikshah, finishes the list.

The third coin, also struck in Isfahan, mentions al-Muqtadi first, followed by "Glorified Sultan" and then Mahmud b. Malikshah (Artuk and Artuk 1970-74:

no. 1050). The reverse field begins with the inscription of the royal title, "Most Glorified Sultan" (*al-sultān al-a'zam*), followed by the *laqab*, Muhi al-Dunya wa-l-Din, and the name, Isma'il b. 'Ali Sunqur Bek. The final coin, struck in Rayy, has only the caliph al-Muqtadi's name on the obverse (Hennequin 1985: no. L3587). On the reverse, "Glorified Sultan" is followed by "Rukn al-Dunya wa-l-Din" and the honorific "Malik al-Islam wa-l-Muslimin." In the lateral legends, we find Barkyaruq (right of field) and b. Malikshah (left of field).

As one can see, we have at least five different individuals named on the four coins above. What is most interesting, however, is that all these coins were minted in the year 486/1093. According to the standard genealogical tables, the reigning sultan at the time was Mahmud b. Malikshah (r. 485–487/1092–1094), and yet we find him named only on the Isfahani coins mentioned. In fact, of all the coins minted in 486/1093 that I was able to study, Mahmud b. Malikshah is listed only on coins from Isfahan. On other coins not listed above but minted in 486/1093, Mahmud b. Malikshah is absent from the legends. On two coins from Nishapur we find Arslan Arghun, a brother of Malikshah, listed on the reverse of the first coin and Barkyaruq listed on the reverse of the second (ANS 1922.211.108; ANS 1967.21.15). Two other coins, one from 'Amul (ANS 0000.999.7444) and the other from Qum (ANS 1922.211.122), list Barkyaruq alone on the reverse. Furthermore, an additional coin in the collection of the ANS (1966.215.3) is similar to the British Museum coin, listing no one but the caliph. It would appear that some explanation is in order. The best place to start would be the series of sudden deaths in 485/1092.

The medieval historians relate many of the details surrounding the death of Malikshah and the ensuing chaos. Turkan Khatun, Malikshah's favored wife, kept his death a secret for a number of days, during which she made plans to ensure the succession of her young son Mahmud. She went with the new wazir, Taj al-Mulk, and her son to the caliph, al-Muqtadi, asking him to recognize Mahmud as the next sultan. Although hesitating at first due to Mahmud's being but four years of age, al-Muqtadi eventually acquiesced, proclaiming the child as sultan and giving him the *laqab*, "Nasir al-Dunya wa-l-Din" (Ibn al-Athir, *al-Kāmil* 8.484–485; Ibn al-Jawzi, *al-Muntazam* 17.14 no. 3646).²⁸ This task completed, Turkan Khatun then ordered the seizure of Mahmud's older brother (by Zubayda Khatun) Barkyaruq, who was residing in Isfahan at the time. Barkyaruq was imprisoned in Isfahan and was awaiting the arrival of Turkan Khatun, Taj al-Mulk, and their forces when he was released by members of the *Nizāmiyya*. Enemies of both Turkan Khatun and Taj al-Mulk, the latter whom they suspected in their patron's death, the *Nizāmiyya*

28. Ibn al-Jawzi, in his biography for Turkan Khatun, describes her as having had ten thousand Turks at her disposal upon the death of her husband, and was viewed as the "mistress of Isfahan."

had the *khutba* ("Friday sermon") read in Barkyaruq's name, proclaiming their allegiance to him; they then set off for Rayy, prior to the arrival of their enemies in Isfahan (Ibn al-Athir, *al-Kāmil* 8.490; Sibṭ b. al-Jawzi, *Mir'āt al-zamān* 32a). Eventually the two forces would clash, with Barkyaruq's side winning; soon after, Taj al-Mulk was killed and Turkan Khatun was returned to Isfahan.

While in Isfahan, Turkan Khatun joined forces with a maternal uncle of Barkyaruq, Isma'il b. 'Ali Sunqur Bek. His forces were initially routed by Barkyaruq, but upon his return to Isfahan, Turkan Khatun pledged her continued support for him, to the point of having coins minted in his name.²⁹ Eventually, however, Isma'il was also killed, leaving one less enemy for Barkyaruq. Another enemy for the would-be sultan came in the form of another (paternal) uncle, Arslan Arghun. Upon Malikshah's death, Arslan Arghun attempted to carve out an independent kingdom for himself. We see a manifestation of this attempt in the coin mentioned above (but not fully described) from Nishapur. This uncle would prove to be a larger threat to Barkyaruq until a vengeful slave killed him in 490/1096 (Ibn al-Athir, *al-Kāmil* 9.21; Ibn al-Jawzi, *al-Muntaẓam* 17.48).

Going back to 487/1094, however, the historians relate the story of how Barkyaruq eventually won the Sultanate. Turkan Khatun, chagrined by the defeats of both Taj al-Mulk and Isma'il b. 'Ali Sunqur Bek, remained in Isfahan, where she eventually died in 487/1094. Barkyaruq, meanwhile, had been captured by forces loyal to her and Mahmud b. Malikshah. He was not immediately killed, as the young Mahmud had contracted smallpox and they wanted to see if he survived; he did not. After Mahmud's death (one month after his mother's), Barkyaruq was able to secure recognition for his Sultanate from al-Muqtadi. The caliph proclaimed Barkyaruq as sultan of the Great Saljuqs, granting him the title "Rukn al-Dunya wa-l-Din" in 487/1094. Al-Muqtadi died promptly thereafter, at the age of thirty-nine (Ibn al-Jawzi, *al-Muntaẓam* 17.10; Ibn al-Athir, *al-Kāmil* 8.493–494; Sibṭ b. Jawzi, *Mir'āt al-zamān* 45b).

The preceding narrative, culled mainly from the works of Ibn al-Athir and Ibn al-Jawzi, helps explain a number of the coins previously mentioned in this section; there remain, however, a number of unanswered questions. The first relates to Barkyaruq's title, Rukn al-Dunya wa-l-Din, that appears on coins minted in 486/1093. This title, according to Ibn al-Athir, was not granted to Barkyaruq until his investiture on 15 Muharram 487 / 21 January 1094. One possible explanation is that the investiture took place in 486/1093, although it would appear that Barkyaruq was not able to accept the position at that time. Another possibility could be that

29. The passage reads: "*wa arabat ismahu 'alā al-dīnār ba'da ibnihā Mahmud b. Malikshāh*" (Ibn al-Athir, *al-Kāmil* 8.490). The feminine singular is clear in the passage, alluding to the fact that Turkan Khatun was indeed a powerful figure at the time.

the title was chosen for Barkyaruq prior to his investiture in the same way the *kunya* was often given to an individual long before they had any children.

What is more interesting, however, is the absence of anyone but the caliph on the Baghdad coins of 486/1093. It is clear from the accounts that al-Muqtadi was quite reluctant to recognize a four-year-old as sultan of the Great Saljuqs. The possibility that al-Muqtadi and his supporters were attempting to capitalize on the Saljuq succession crisis and assert their independence seems plausible. Muhammad Abu al-Faraj al-'Ush, a scholar who has addressed these coins in an article, argues otherwise. He suggests that these coins most likely were struck after Malikshah's death but prior to Turkan Khatun's request for recognition of Mahmud as sultan. Although plausible, I do not believe this is the only possibility. Al-'Ush, on the other hand, discounts the possibility that al-Muqtadi and his supporters would be willing to assert their autonomy:

In fact, the Abbasid caliphs since the year 334 H. considered that they had turned over military and executive power to armed feudal clans, and that they had disassociated themselves from the consequences and results of the consultations which were torture to them. I do not believe that the caliph al-Muqtadi bi-amr Allah (467–487) desired to seize the burden of secular government in that brawling crowd of seekers after wealth and authority, for the caliph had known sedateness and calm, and had acquired the respect and love of the people through his life (al-'Ush 1972: 10–11).

There are a number of reasons why I disagree with this depiction of the Caliphate during this period, the utmost being that it ignores the actions of the caliph in question, as well as those of both earlier and later caliphs, many of whom were attempting to maintain and expand their "temporal" authority. In my estimation, these coins, lacking any names but that of the caliph and his heir apparent, were a limited attempt at realizing the caliphal right of *sikka*.

Returning to the remainder of Barkyaruq's reign, we find that he was still not free from familial rivals. During a short period of general peace for Barkyaruq we find the following two coins:

Obv.: لا اله الا / الله وحده / لا شريك له / الإمام المستظهر / بالله

Internal margin: Bismillah, mint, and date

External margin: Clipped

Rev.: لله / محمد رسول الله / السلطان المعظم / شاهانشاه بركيارق / الملك [عند] الدولة / سنجر [بن] ملك شاه

Margin: Clipped

Obv.: لله / لا اله الا / الله وحده / لا شريك له / المستظهر

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3–4

Rev.: برکیارق / محمد / رسول الله / [الدنيا...م] / ابو المظ ر

Left field: و الدين

Right field: ركن الدنيا

Margin: Q 9: 33

The first coin was struck at Nishapur in 491/1097, and includes on the obverse the name of the current caliph, al-Mustazhir billah (ANS 1968.99.1). On the reverse, we find “Glorified Sultan” followed by “Shahanshah”. We also find the new *laqab* for Barkyaruq, “Adud al-Dawla”, as well as a reference to his half-brother, Sanjar b. Malikshah. Sanjar’s name on this coin is explained by the fact that he was made governor in the east in 490/1096, in an effort to ward off future threats like that of Arslan Arghun.

The second coin, minted in Isfahan also in 491/1097, has al-Mustazhir on the obverse, while on the reverse, we find Barkyaruq named, along with his old *laqab*, “Rukn al-Dunya wa-l-Din” (ANS 1973.187.12). Although the coinage of this year tends to show a certain unanimity in titulature, there were storm clouds on the horizon, mainly in the form of Barkyaruq’s *other* half-brother, Muhammad b. Malikshah. Muhammad had been sent to Arran to rule as governor, being accompanied by his “father-guardian”, the *atabek* Qutlugh Tekin. Muhammad was unwilling to be so supervised, however, and soon had his *atabek* killed (Ibn al-Athir, *al-Kāmil* 9.22–22; Ibn al-Jawzi, *al-Muntazam* 17.48). By 492/1098, Muhammad had secured the *laqab* “Ghiyath al-Dunya wa-l-Din” from al-Mustazhir and quickly set about making life miserable for Barkyaruq (Ibn al-Athir, *al-Kāmil* 9.22).

Muhammad had the support of his brother Sanjar, as well as a son of Nizam al-Mulk, Mu’ayyad al-Mulk. Mu’ayyad al-Mulk had been Barkyaruq’s wazir, but upon the entreaty of his mother, Zubayda Khatun, Barkyaruq had replaced Mu’ayyad al-Mulk with Fakhr al-Mulk.³⁰ The *Nizāmiyya* also backed Muhammad against Barkyaruq, thus setting the stage for a series of five battles over the next six years. Although Barkyaruq had only a small core of amirs supporting him, he was able to maintain some semblance of authority. Battles were won and lost by each of the brothers; settlements were agreed to at the end of each. The coinage of the period reflects the shifting spheres of influence:

30. Mu’ayyad al-Mulk had attempted to leave Zubayda Khatun in Isfahan, ignoring Barkyaruq’s request that she be sent to him (al-Bundari 88; Ibn al Athir, *al-Kāmil* 8.507). Mu’ayyad al-Mulk got his revenge on Zubayda Khatun, however, having her captured and killed in Isfahan. Later on, when Mu’ayyad al-Mulk was captured by Barkyaruq’s forces, Barkyaruq strangled Mu’ayyad al-Mulk himself in vengeance (Ibn al-Jawzi, *al-Muntazam* 17.65–66, 73 (no. 3722); Ibn al-Athir, *al-Kāmil* 9.31–32; al-Bundari 88).

Obv.: نصر / لا اله الا الله / وحده لا شريك له / المستظهر بالله

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: ابو شجاع / محمد رسول الله / السلطان المعظم / غياث الدنيا و الدين / [محمد]

Margin: Q 9: 33

Obv.: عدل / لا اله الا الله / وحده لا شريك له / المستظهر بالله

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: لله / محمد رسول الله / السلطان المعظم / غياث الدنيا و الدين / محمد بن ملكشاه

Margin: Q 9: 33

Both coins, minted in 493/1099 in the cities of Isfahan and Rayy respectively (ANS 1967.54.4; ANS 1940.138.3), have the caliph, al-Mustazhir, listed on the obverse, while on the reverse we find the *laqab* and titlature for Muhammad b. Malikshah. Barkyaruq is not mentioned on either coin. However, Barkyaruq did remain on some coins during this period:

Obv.: الامام / لا اله الا الله / وحده لا شريك له / المستظهر بالله / امير المؤمنين

Internal margin: Bismillah, mint, and date

External margin: Q 30: 3-4

Rev.: لله / محمد رسول الله / صلي الله عليه / عضد الدولة / القاهرة / بر كيارق

Left field: ابو منصور

Right field: عمدة الدين

Margin: Q 9: 33

This coin³¹ represents a Baghdad type that can first be seen in 488-494/1095-1100. On the obverse, we find the full caliphal title for al-Mustazhir billah, and on the reverse we find Barkyaruq and his *laqab*, “Adud al-Dawla al-Qahira”. Soon thereafter, however, Barkyaruq would lose most of his power. By his death at the age of twenty-five in 498/1105 (the year traditionally given as the last year of his reign), Barkyaruq was not named on any of the coins from the central Islamic lands. When we look for examples from the entirety of Barkyaruq’s reign, it becomes clear that although Barkyaruq died in 498/1105, many cities had long since ceased recognizing his rule on their coinage. Nishapur stopped using his name on its coinage in 491/1097, Isfahan in 493/1099, and Baghdad in 494/1100; in all cases, Muhammad b. Malikshah replaced him on the coins. Other cities in

31. ANS 1964.23.3 (3.822 g) minted in the year 493/1099-1100 in Baghdad.

32. The clearest example of this was in the case of Rayy, which began recognizing Muhammad b. Malikshah in 493/1099, but in 497/1104 returned Barkyaruq to the coinage (ANS 1966.136.23).

the region followed a similar pattern, often altering their coinage according to who controlled the city at a particular time.³²

It is clear from the case study of Barkyaruq's reign that the political situation following Malikshah's death was quite complex. This pattern of changing alliances and interfamily rivalries was to continue up to the coming of the Mongols. Muhammad b. Malikshah was initially victorious against his half-brother Barkyaruq; eventually his early ally Sanjar would become a burden to him. Furthermore, following Muhammad b. Malikshah's death, we find the Saljuq Sultanate in the central Islamic lands broken up into a number of even smaller entities. By the end of the period in question, the map of the region had become a quilted pattern of limited spheres of influence.

Though at times sparse, the numismatic evidence for this period can help us understand what was going on both politically and militarily. The patterns of change seen in the coinage during Barkyaruq's reign were to continue up through the year 575/1180, and deserve more discussion and analysis than I have given here. I have only focused on the titular evidence of the coins, and have compiled a table for only three of twenty-one mints included in the study. There are numerous other benefits these coins have to offer, both to the numismatist and to the historian. I have alluded to the ornamentation on many of the coins, as well as the variance in calligraphic style. This is one avenue of research that could be pursued by scholars working on the period. In another vein, I have not presented any findings of an economic nature, either in regard to the purity of the coins or those involving the circulation of wealth in the area. To my knowledge, these are areas in which these coins may be put to further profitable use. What I hope to have shown in this paper is that the most basic numismatic research can reveal a vast amount of information on this pivotal period in Islamic history. Although I have come to this work as a historian, focusing on the political aspect of the coinage, it is clear that more can be done with this literal treasure trove of evidence.

REFERENCES

- Album, Stephen. 1977. *Marsden's numismata orientalia illustrata*. New York: Attic Books.
- , Michael Bates, and George C. Miles. Unpublished notes on Buyid coins, held in ANS collection.
- Alptekin, C. 1977. Selçuklu paraları. *Journal of Seljuk Studies* 3: 435–591, plates I–XI.
- Artuk, I. and C. Artuk. 1970–74. *İstanbul Arkeoloji Müzeleri teşhirdeki islâmi*

- sikkeler katalogu*. 2 vols. İstanbul.
- Bates, Michael. 1978a. Islamic Numismatics. *Middle East Studies Association Bulletin* 12(2): 1–16.
- . 1978b. Islamic numismatics. *Middle East Studies Association Bulletin* 12(3): 2–18.
- . 1979a. Islamic numismatics. *Middle East Studies Association Bulletin* 13(1): 3–21.
- . 1979a. Islamic numismatics. *Middle East Studies Association Bulletin* 13(2): 1–9.
- BMSA: Lane-Poole, Stanley. 1875. *Catalogue of oriental coins in the British Museum*. 10 vols. London.
- Bosworth, C. E. 1968. The political and dynastic history of the Iranian world (A.D. 1000–1217). In: *The Cambridge history of Iran*, vol. 5: *the Saljuq and Mongol periods*, J. A. Boyle, ed., Cambridge: Cambridge University Press.
- . 1996. *The new Islamic dynasties*. New York: Columbia University Press.
- al-Bundari, al-Fath b. 'Ali. 1989. *Kitāb zubdat al-nuṣra wa nukhbat al-'usra*. In: M. Th. Houtsma, ed., *Recueil de textes relatifs à l'histoire des Seldjoudes*, vol. 2. Leiden: E. J. Brill.
- Busse, Heribert. 1969. *Chalif und Grosskönig: die Buyiden im Iraq (945–1055)*. Beirut: Orient Institut der Deutschen Morgenländischen Gesellschaft.
- Codrington, O. 1904. *A manual of Musalman numismatics*. Asiatic Society monographs 5. London.
- Ehrenkreutz, A. 1963. Studies in the monetary history of the Near East in the Middle Ages; II: the standard of fineness of Western and Eastern dinārs before the Crusades. *Journal of the Economic and Social History of the Orient* 6: 243–277.
- EP: *Encyclopaedia of Islam, New Edition*. 1954–in progress. Leiden: E. J. Brill.
- Hanne, Eric J. 1998. *The caliphate revisited: the Abbasids of the 11th and 12th century*. Ph.D. dissertation, University of Michigan.
- . in press. *Putting the caliph in his place: power and authority in medieval Islam*. Contract pending.
- Ghalib, T. 1894. *Catalogue des monnaies turcomanes*. Constantinople: Musée Impériale Ottomane, Section des monnaies musulmanes.
- Hennequin, Gilles. 1985. *CMMBN*, vol. 5: *Les Salgūqs et leurs successeurs*. Paris.
- Hillenbrand, Carole. 1995. 1092: A murderous year. *Arabist* 15–16: 281–296.
- Ibn al-Athir, Abu al-Hasan 'Ali. 1998. *al-Kāmil fī 'l-ta'rikh*. vols. 8–10, C. J. Tornberg, ed. Leiden: E. J. Brill, 1893 (repr., Beirut).
- Ibn al-Jawzi, Abu al-Faraj. 1992. *al-Muntazam fī 'l-ta'rikh al-mulūk wa-l-umam*, vols. 14–18. Beirut.
- Lambton, A. K. S. 1988. *Continuity and change in medieval Persia: aspects of*

- administrative, economic, and social history, 11th–14th century*. Albany: State University of New York Press.
- Lane-Poole, Stanley. 1894. *The Mohammedan dynasties: chronological and genealogical tables with historical introductions*. London.
- . 1897. *Catalogue of the collection of Arabic coins preserved in the Khedivial Library at Cairo*. London: Quaritch.
- Lavoix, Henri. 1849–1896. *Catalogue des monnaies musulmanes de la Bibliothèque nationale*. 3 vols. Paris.
- Lowick, Nicholas. 1970. Seljuq coins. *Numismatic Chronicle* 7 (10): 241–251.
- Luther, K. Allin. 1964. *The political transformation of the Seljuq Sultanate of Iraq and western Iran, 1152–1187*. Ph.D. dissertation, Princeton University.
- Mayer, L. A. 1954. *Bibliography of Moslem numismatics, India excepted*. Oriental Translation Fund, vol. 35. London: Royal Asiatic Society.
- Miles, George C. 1938. *The Numismatic History of Rayy*. ANS Numismatic Studies 2, New York: American Numismatic Society.
- . 1975. Numismatics. In: Frye, ed., *Cambridge history of Iran*, vol. 4. Cambridge: Cambridge University Press.
- Sibt b. al-Jawzi. 1906. *Mir'āt al-zamān fi ta'rikh al-a'yān*. J. R. Jewett, ed. Facsimile edition for 495–654 AH. Chicago: Chicago University Press. Partial French translation for 447–452 AH, Kassem Yazbek, ed. and trans. *Les dynasties de l'Islam à travers del Mir'āt al-Zamān*. Beirut: M. A. J. D., 1983; partial edition for 448–479 AH by Ali Sevim, ed. *Mir'āt al-zamān*. Ankara, 1968; British Library, Or. 9258, 4619.
- Stern, S. M. 1967. The coins of Amul. *Numismatic Chronicle* 7: 205–278.
- Tewhid. 1903. *Catalogue des monnaies des Khakans Turcs, Gaznevîdes, Seldjoukides de Khorassan et d'Irak...et Akkoyounlis*. Constantinople: Imp. Mahmoud Bey.
- al-'Ush. M. 1972. Dinar Abbasi bi-ism al-Muqtadi bi-amr Allah fi al-'ahd al-saljuqi [An Abbasid Dinar in the name of al-Muqtadi bi-Amr Allah in the Seljuk Period]. In: *al-Maskukat* 3: 21–27.
- Zambaur, E. von. 1968. *Die Münzprägungen des Islams*. Wiesbaden: Franz Steiner.
- . 1927. *Manuel de généalogie et de chronologie pour l'histoire de l'Islam*. Hanover: H. Lafaire.

Counting Tokens from the Excavations at Psalmodi (Gard, France)

PLATES 28–29

DAVID YOON*

The excavations of the medieval abbey of Psalmodi in southern France have yielded a variety of numismatic finds. This article describes the counting tokens found there: a total of thirteen jetons, probably all of the fifteenth to early sixteenth centuries. These jetons provide evidence for Nuremberg's rapid and thorough domination of the western European market in counting tokens around the end of the fifteenth century.

The site of the medieval abbey of Psalmodi, on the edge of the Petite Camargue in southern France, was partially excavated by a team from Williams College between 1970 and 1989 (Dodds et al. 1989). Yielding an occupation sequence of over 1,500 years, this site provides rich evidence for long-term economic, religious, and artistic trends.

Located on what would, in the Middle Ages, have been a small island in a coastal lagoon, Psalmodi was one of the wealthy and powerful royal monasteries that dominated feudal eastern Languedoc. At its peak, it possessed as many as ninety dependent priories and churches and extensive landholdings (Dodds et al. 1989: 14), so its revenues were considerable. Suffering from chronic malarial conditions as the lagoon silted up, the monastery was closed in 1537, and its properties and revenues were transferred to the church of Notre Dame des Sablons in nearby Aigues-Mortes, where the remaining monks became canons in a collegiate

* The American Numismatic Society, 96 Fulton Street, New York, NY 10038, USA (yoon@numismatics.org).

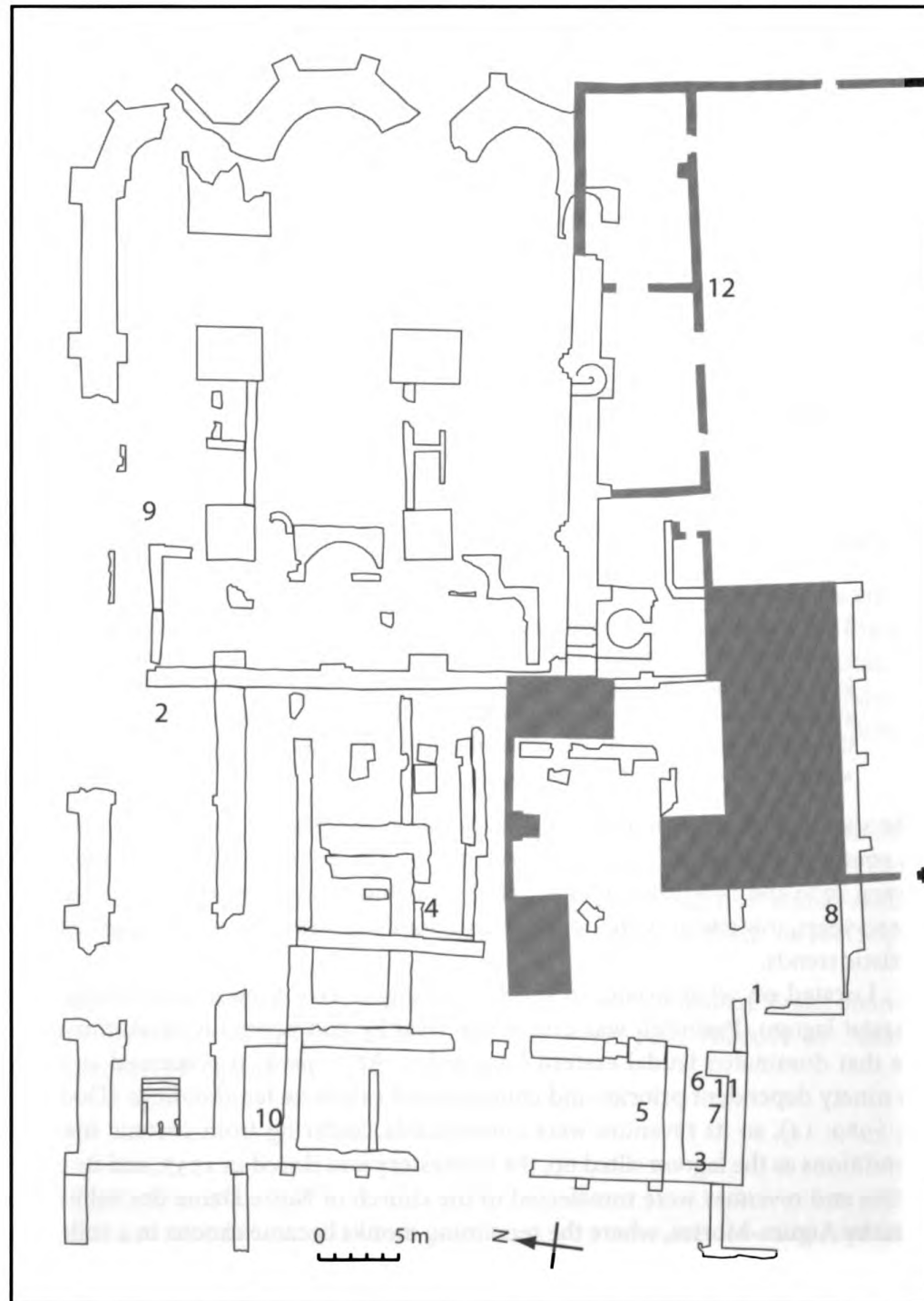


FIGURE 1. Psalmodi site plan showing finds of counting tokens in relation to architectural remains.

chapter (Rivals 1937; Goiffon 1895).¹ After a subsequent transfer to help fund the creation of the bishopric of Alais (Alès) in 1694, the buildings and core estate of the abbey were later sold off to a group of private individuals by the revolutionary government in 1791 (Goiffon 1895).

The monastery's varied and considerable revenues will no doubt have required considerable attention to accounting. Before the use of place-notation arithmetic became prevalent in Europe, the necessary calculations were normally performed using a counting board or cloth, marked with a series of lines and spaces on which counting tokens were placed to represent numbers (Barnard 1916). Many types of objects could be used as counters, but coin-like base-metal jetons manufactured specifically for that purpose became widely used toward the end of the Middle Ages. From the late fifteenth century until counting boards became obsolete, by far the greatest number of these counting tokens were made in Nuremberg, which was a major center of brass production.

ARCHAEOLOGICAL SETTING

As described in a previous article (Heath and Yoon 2001), the excavations at Psalmodi concentrated on the abbey church and the adjoining buildings of the monastic complex. It is primarily in and around this central monastic complex that thirteen jetons have been found. Excavation in this part of the site is less complete than for the abbatial church, since the standing buildings of the modern farm complex partially overlap this portion of the monastery.

The thirteen jetons were found one or two at a time, in various parts of the site, between 1976 and 2003. The findspots for these jetons can be plotted on a site plan (Fig. 1), but they are not, for the most part, associated with stratigraphic contexts. The situations in which they were found fall into three general categories: nos. 2 and 9 were found during clearing of overburden from the area of the late medieval abbatial church; nos. 1, 3–8, 10, and 11 were found during excavation (mostly while removing a disturbed post-medieval fill) of various structures of the monastic complex to the south and southwest of the church, structures thought to include the cloister, refectory, chapterhouse, and dormitory; no. 12 was found in 2003, in spoil from construction work taking place at the time in the farm courtyard, in an area of unknown use during the Middle Ages. Finally, no. 13 was catalogued in 1988 as lacking a known findspot.

Little stratigraphic information was recorded about the levels in which most or all of these jetons were apparently found, but comparison to surviving baulks indicates that in most cases, the strata were probably loose, silty soil filled with

1. In practice, the revenues remained to some degree at the disposal of the state. As governor of Languedoc, Henri I de Montmorency granted 3,000 livres per annum from the revenues of Psalmodi to his Protestant allies in 1575 (Davies 2000: 5), a use which suggests that the collegiate chapter of Aigues-Mortes was not fully maintaining church control over the use of its income.

rubble, decaying mortar, and pottery fragments (mostly regional products of the fourteenth to nineteenth centuries). This deposit seems to have been formed in large part by the reworking of rubble from the ruined buildings of the last phase of monastic occupation when people removed building stone from the site for reuse (Dublin 2003). Most of the jetons were, to varying degrees, encrusted with sand cemented to their surfaces by a mixture of calcareous precipitates and copper corrosion products. The underlying corrosion varies considerably in severity, with some pieces being essentially undamaged, with only light lime concretions, while others have seen significant damage. One piece (no. 1) is sufficiently corroded to have become very friable, and was also one of the more heavily encrusted.

CATALOGUE

Twelve of the jetons catalogued here are from Nuremberg; these are all of the early, anonymous types dating before about 1550. No chemical analyses have been carried out, but all are of some form of copper alloy. The letter-forms on all of these jetons except no. 9 are Lombardic capitals.² On no. 9, a mixture of Lombardic and Roman forms is used. The thirteenth item remains unidentified, though it is likely a jeton. It is also of copper alloy, but it is considerably thicker than the others, and the metal is of a more reddish coppery color than the Nuremberg jetons. Type references are to Mitchiner (1988) or Barnard (1916) for the Nuremberg jetons, and to these as well as La Tour (1899) for medieval French jetons.

1. PS80.52.06: 1.80 g; 30 mm; die axis unknown

Obv.: Single-masted vessel sailing l. with sail, five shrouds or stays, cross with pennant on forecastle, and quartered flag on sterncastle; waves below; around: ...G*GG*GG*GG

Rev.: Double-stranded arcuate cross fleuretty cantoned by crowned lis; around: ...OBE..EO...AG.

Ref.: Not in Mitchiner; cf. Barnard plate 29 nos. 19, 20, but larger.

The pairing of the "ship" type with the arcuate cross fleuretty, which closely follows a type issued by the municipality of Paris (Barnard 1916: plate 8, no. 91), is unusual from Nuremberg, especially in this module. Although Barnard describes two Nuremberg jetons with these types, his examples are smaller (about 22 millimeters); Barnard also describes a larger (26 millimeters) piece that combines the vessel with a simple cross fleury

2. All of the names used for this style of lettering—Lombardic capitals, Gothic capitals, or versals—are somewhat unsatisfactory. "Lombardic" lends itself to confusion with what is also called "Beneventan" script, "Gothic" lends itself to confusion with either blackletter capitals or geometric sans-serif lettering, and the term "versals" is not literally applicable in an epigraphic context where no strokes of the pen are used. I have settled on "Lombardic" as being the most frequently used of these alternatives.

cantoned with shields (Barnard 1916: plate 29, no. 11), and La Tour (1910: no. 1422) describes a piece with “navire” and “croix fleurdelysée”, although the form of the cross is not specified. The arcuate cross fleuretty is also known on a few early large-diameter Nuremberg jetons paired with the lozenge containing four fleurs de lis, imitating a type from Paris documented in 1488 (Mitchiner 1988: 349). It seems likely, therefore, that these combinations are from the years around 1490, the time of the transition from the smaller “Germanic” types to the larger, more widely exported types. Given the rarity of this combination, it is especially unfortunate that this is one of the most poorly preserved pieces.

2. PS76.32.02: 2.21 g; 29 mm; 45°

Obv.: Vessel sailing l. as on 1, G at masthead; around: monogram, VOLGVE:LA:GALLEE:DE:FRANCE

Rev.: Lozenge with four fleurs de lis, trefoil of pellets flanked by annulets in field on each side; around: crown, VIVE:LE:BON:ROY:DE:FRANCE::

Ref.: Mitchiner 1121–1123.

A few traces of a silvery metal (tin?) survive on the obverse. This type (“ship penny” in large size with literate text) is known to have been in use in the 1490s, based on its presence at the site of La Isabela in the Dominican Republic, occupied from 1494 to 1498 (Deagan and Cruxent 2002; Stahl 1993–94 includes only coins, not jetons).

3. PS81.53.142: 1.60 g; 25 mm; 0°

Obv.: Vessel sailing l. as on 2; around: monogram, VLG...:LA:GALLEE:DE:FRA:

Rev.: Lozenge with four fleurs de lis as on 2 except trefoils flanked by pellets; around: crown, VIVE:LE:BON:ROV:DE...AN

Ref.: Mitchiner 1130.

4. PS80.54.91: 1.42 g; 26.5 mm; 45°

Obv.: Vessel sailing l. as on 2; around: monogram, V...:DERANELOR:AEDVL:

Rev.: Lozenge with four fleurs de lis as on 2; around: crown, VIVE:LE:BON..O.:DE:RANE:

Ref.: Mitchiner 1140 (same obverse die).

5. PS81.56.18: 1.79 g; 26.5 mm; 165°

Obv.: Vessel sailing l. as on 2; around: monogram, VLEARGL:MD:.VBE.VO*MB:

Rev.: Lozenge with four fleurs de lis as on 2; around: crown, VIVE:RGMVRDEV.N.:RVEM:

Ref.: Mitchiner 1146–1149.

6. PS80.53.240: 1.62 g; 26 mm; 0°
Obv.: Vessel sailing l. as on 2 but crudely executed; around: monogram, RVNVBM..BL:EN.EVGAV:
Rev.: Lozenge with four fleurs de lis as on 2; around: crown, VIVALV.: VNGDI.OV...V:
Ref.: Mitchiner 1156–1158.
7. PS81.61.111: 1.22 g; 25 mm; 90°
Obv.: Vessel sailing l. as on 2; around: monogram, ODBLCOPMEO. ACOBVMO.B:
Rev.: Lozenge with four fleurs de lis as on 3, but pellet instead of trefoil in field on each side; around: crown, OBVM.OPDBVM.OPDBVMOM
Ref.: Mitchiner 1152–1154.
8. PS79.50.01: 1.65 g; 27 mm; 115°
Obv.: Vessel as on 1 but with flag on l., pennant on r., and yard with sail thickened into a trapezoid at masthead; around: crown, E...O.EO..EO ...EONEONEON
Rev.: Lozenge with four fleurs de lis as on 2 but annulet instead of trefoil in field on each side; around: monogram (?), ..EDO:ENO...DOE.:MNO..
Ref.: Mitchiner 1183–1185.
9. PS76.12.22a: 2.40 g; 27 mm; 255°
Obv.: Vessel as on 8 but three horizontal bars instead of trapezoid for yard and flowers formed of six pellets placed around a central pellet in field above forecastle and sterncastle; around: crown, BONVBONWBONV BONVBONW
Rev.: Lozenge with four fleurs de lis as on 2 but retrograde Roman L instead of trefoil in field on each side; around: 8ENVO8E 8ENVO8ENVO
Ref.: Cf. Mitchiner 1172–1176.
The highly modified obverse design and the use of partially Roman lettering both point to a late date for this piece, toward the middle of the sixteenth century. The four retrograde L's in the reverse field might be taken as a maker's mark, but the overall style, die axis, and the likely date all argue against any connection with the jetons of the Lauffer family (Mitchiner 1988).
10. PS76.16.01: 2.13 g; 27 mm; 210°
Obv.: Shield with arms of France modern, accosted by trefoil of pellets flanked by annulets on each side; around: crown, BOLE*BOLEO*BOL.O*BOL
Rev.: Orb with cross pattée atop, surrounded by a trilobate tressure; around: +BOL*EOLECE.*.EOLC..*LOE
Ref.: Mitchiner 1082.

11. PS80.53.232: 2.03 g; 26 mm; 270°

Obv.: Shield with arms of France as on 10; around: crown, NVEO...
VONEVBE:VONVEO

Rev.: Orb with cross pattée in tressure as on 10; around: NOVENVCOLE:
VOLEVONEOD:EO:

Ref.: Mitchiner 1082.

12. PS03.U.02: 1.08 g; 23.5 mm; 0°

Obv.: Six-petaled rose surrounded by alternating crowns and fleurs de lis;
around: VONEVONEVONEVONEVONE

Rev.: Orb with cross pattée in tressure as on 10; around: MODANEVO
ENAEVBNOEVO:

Ref.: Not in Mitchiner or Barnard.

Although two petals of the rose are difficult to see on this piece, it is clear from the spacing and the visible traces that it is a six-petaled rose. According to Mitchiner (1988: 377), the rose/orb type in the anonymous series always has a five-petaled rose, except on some late examples after 1550—though the only six-petaled example depicted, Mitchiner's no. 1223, has a large orb on the reverse, elsewhere stated (Mitchiner 1988: 355) to be an early feature, and otherwise has no characteristics said to be late apart from the use of a rosette as an initial mark, which is also found on early Nuremberg jetons (e.g., Mitchiner 1988: no. 1060). Neither the letter punches nor the style of engraving on the Psalmodi piece appear to be particularly late. In terms of thickness of lines, angularity, sharpness of relief, and lack of Roman letter forms, this piece, like the main early series of rose/orb jetons, is quite distinct from the late anonymous rose/orb jetons depicted by Mitchiner, as well as early signed pieces such as those of Jörg Schultes or Hans Schultes I (Mitchiner 1988; München 1989).

13. PS88.U.01a: 2.16 g; 19 × 20 mm; die axis unknown

Obv?: Mostly effaced, but traces remain of at least two fleurs de lis with the edge of another device above, possibly a large crown. Circular legend: ...AIL...

Rev?: Design in field entirely effaced; circular legend: ...O...

Ref.: Not in Mitchiner, Barnard, or La Tour.

Although the piece is roughly square and largely effaced, enough of the design is visible to make clear that it was struck using dies intended for a larger, round flan. Either an inappropriately shaped flan was used for this piece, which would be very unusual for counting tokens, or else this piece was originally larger but was subsequently cut down to a roughly square shape for unknown reasons. If the latter is true, the original diameter would

have been approximately 26 mm, and the original weight somewhere around 3.3 g.³

The relatively thick, blocky style of lettering is reminiscent of the French Ave Maria jetons of the late fourteenth to fifteenth centuries, which commonly feature the arms of France or a crown on the obverse (Mitchiner 1988: nos. 417–481, 521–539, 565–572, 584–600, 620–711; La Tour 1899), and the estimated diameter and weight for the full circular shape are in the appropriate range as well. The placement of the two visible fleurs de lis, however, precludes their being arranged in a shield as the arms of France modern, which is a common obverse type on Ave Maria jetons, and there does not appear to be enough space for a lozenge large enough to enclose four fleurs de lis. Some Ave Maria jetons have either three or four fleurs de lis without shield or lozenge (Mitchiner 1988: nos. 436, 568–572, 634, 639, 641–645) but, although the reading of the lettering is not completely certain except for the L, the possible options are not compatible with the usual AVE MARIA GRACIA PLENA.

In summary, since France did not mint copper coinage at the time, and this object does not resemble late medieval coin types from adjoining regions, it should be considered some sort of token or jeton. The size reconstructed for the intended circular shape and the design employing multiple fleurs de lis would be more suited to a jeton than to a religious token. The size and thickness of the flan and the style of lettering all seem to correspond better with French jetons of the late fourteenth to fifteenth centuries (Mitchiner 1988; La Tour 1899) than they do with sixteenth-century jetons from France, the Low Countries, or Nuremberg (Mitchiner 1988; 1991; La Tour 1910). Thus, it is likely to be a late medieval French jeton, but it is in such poor condition that little more can be said.

DISCUSSION

The most obvious feature of the site's assemblage of counting tokens—that it is dominated by the products of Nuremberg, with only one possible French jeton—raises some interesting issues. Counting tokens are not uncommon; Nuremberg jetons in particular are known to have been produced in very large quantities, and they were distributed widely throughout much of Europe and beyond (Barnard 1916: 65, 208). As inexpensive utilitarian objects, they were subject to casual loss or discard, and so are frequently found archaeologically (Labrot 1989: 208). Considering this, it is remarkable how little has been published about

3. A parallel for cutting a jeton down to a roughly square shape can be found in item SUSS-53F321 in the database of the Portable Antiquities Scheme for England and Wales (http://www.findsdatabase.org.uk/hms/pas_obj.php?type=finds&id=00142D540430159A).

their frequency and distribution. There are a large number of examples with known findspots for England: over a thousand finds by metal-detectorists in and around London have been published by Mitchiner (1988), and more recent ones throughout England and Wales are being catalogued on-line by the Portable Antiquities Scheme (<http://www.finds.org.uk>), while excavation reports such as that for Colchester (Crummy 1987) provide more contextualized information. For continental Europe, far less is known. Mitchiner (1988) presents a small group from Reimerswaal in an appendix; Weiller's (1975, 1989) thorough survey of numismatic finds in Luxembourg reports few jetons, and of these only a small number date before the mid-sixteenth century. The large collection of the Staatliche Münzsammlung München, presumably mostly of regional provenance, has been partially published (München 1989). Other publications are generally either completely unprovenanced, such as the large Rouyer collection (La Tour 1899; 1910), or present very few pieces.

One possible reason for the prevalence of Nuremberg's products at Psalmodi would be chronological selection: jetons from France were produced in enough quantity to be important in English assemblages in the fourteenth and fifteenth centuries, but they decline rapidly after 1500. If the finds at Psalmodi come from deposits that represent only the last phase of monastic occupation in the early sixteenth century, this would explain Nuremberg's dominance. However, in the trenches where the pottery from these deposits has been studied, the ceramic assemblage contains a mixture of types from the fourteenth, fifteenth, and sixteenth centuries, along with later material introduced when walls and floors were robbed out. Thus, if jetons of the fourteenth and fifteenth centuries were consumed at the same rate as those of the sixteenth, they should be present in larger quantities.

Nuremberg jetons also dominate assemblages in England, although not to the same degree. For the period from the thirteenth century to 1550 as a whole, Mitchiner (1988: 31–32) found that Nuremberg jetons were about twice as abundant as French copper-alloy jetons (278 vs. 131), even though few of Nuremberg's date before 1500. The excavation finds from Colchester (Crummy 1987) appear to present this pattern at least as strongly, although the exact ratio cannot be determined, since the identifications are too terse and none are illustrated.

So one must conclude that the rate at which jetons were consumed increased greatly once Nuremberg's exports became abundant around 1490 (Mitchiner 1988: 248). Presumably Nuremberg's workshops were able to produce jetons much more cheaply and abundantly than previous producers, and took advantage of the distribution networks accessible through their connections with the Fuggers. It is not clear why the ratio of Nuremberg to French jetons is so much higher at Psalmodi than it is in London: the small sample size makes random error a possibility, and it is conceivable that practices affecting the handling or discard of jetons could have changed around the end of the fifteenth century, but the fact that

the main production centers for French jetons were in the north (principally Paris and Tournai, and perhaps Tours and other mints during the years after Agincourt) may also have contributed to their relative scarcity in Mediterranean France. It is possible that the market for counting tokens in southern France was not just taken over by Nuremberg but to a considerable degree created by Nuremberg.

Questions about distribution and chronology also pertain specifically to the Nuremberg jetons at Psalmodi. At Psalmodi, the numbers of the shield/orb, ship/lozenge, and rose/orb types, respectively, are 2:9:1. However, the numbers of these types recovered from the Thames are 17:60:103 (Mitchiner 1988: 32). It is possible that different types were targeted to different regions: among the major anonymous types, Koenig (1935: 7–11) hypothesized that the shield type was intended for export to France, the ship type for export to France and England, and the rose/orb type for Germany. The numbers above seem to fit tolerably with Koenig's hypothesis, allowing for the fact that England probably obtained its jetons through the Low Countries and northern Germany rather than directly from Nuremberg. However, it is also worth noting that the ship/lozenge and shield/orb types are respectively rare and entirely absent among the signed jetons of the late sixteenth century, while the rose/orb type is dominant, suggesting the possibility of a chronological difference in abundance among these types as well.

It is unfortunate that the archaeological contexts provide no stratigraphically precise dates for the counting tokens found at Psalmodi. The anonymous Nuremberg types are generally difficult to date; at most, it is usually possible only to indicate that they are relatively early or late in the 1490 to 1550 (or later) range, based on their stylistic evolution from their prototype (Mitchiner 1988). The assemblage presented here is typologically quite diverse. The twelve specimens represent four major types, and even within the predominant ship-lozenge type, a wide range of varieties is present: large diameter with literate legends, small diameter with literate legends, small diameter with modified legends, small diameter with arbitrary legends, and two forms of modified ship designs.

The known date of the closure of the monastery in 1537 may contribute to the dating of these types, but this depends on the interpretation of nos. 9 and 12. All of the others could easily date before 1537, but these two are questionable, no. 9 because of the use of Roman letter forms and the highly modified ship design, and no. 12 because of the six-petaled rose. Reasons have been suggested above for questioning Mitchiner's statement that six-petaled roses on anonymous rose/orb jetons date after 1550. The chronological evolution of the ship/lozenge type is far from clear, but the close similarity of the ship/lozenge jetons of Jörg Schultes and Hans Schultes I to some of the more modified anonymous ones suggests that the anonymous types continued to at least 1550. The apparently clear fact of the monastery's closure is not in itself conclusive, because it is not entirely clear how Psalmodi's estates were managed (and how the buildings were used) after 1537.

By 1704, when it was owned by the cathedral of Alais, the abbey was reputedly occupied by a local *fermier*, who worked the core estate (Goiffon 1895: 263). What is not known is whether, in the mid-sixteenth century, the abbey was occupied by a tenant with finances complicated enough to require a counting board. If the late features on no. 9 existed by 1537, Psalmodi could represent a valuable fixed point for the chronology of the anonymous Nuremberg jetons. At present, however, this can only be hypothetical.

ACKNOWLEDGMENTS

I thank Brooks Stoddard, the director of the Psalmodi excavations, and Jean-Louis Foncelle, the current owner of the site, for the opportunity to publish these tokens and for their efforts to facilitate the research. I also thank Sylvia Tomczyk and Robert Hoge for helpful discussion about counting tokens, and the reviewers for this journal for their useful comments on an earlier version. Responsibility for remaining errors is, of course, my own.

REFERENCES

- Barnard, F. P. 1916. *The casting-counter and the counting board*. Oxford: Clarendon Press.
- Crummy, Nina, ed. 1987. *The coins from excavations in Colchester, 1971–9*. Colchester Archaeological Report 4. Colchester: Colchester Archaeological Trust.
- Davies, Joan. 2000. *Profit and patronage: the role of monastic benefices in Henri I duc de Montmorency's family economy and clientele, 1563–1614*. University of Essex, Department of History, Working Papers 1.
- Deagan, Kathleen and José María Cruxent. 2002. *Archaeology at La Isabela: America's first European town*. New Haven, Conn.: Yale University Press.
- Dodds, Jerrilynn, Brooks W. Stoddard, Whitney S. Stoddard, Bailey K. Young, and Kitch Carter-Young. 1989. L'ancienne abbaye de Psalmodi (Saint-Laurent-d'Aigouze, Gard): premier bilan des fouilles (1970–1988). *Archéologie Médiévale* 19: 7–55.
- Dublin, Susan A. 2003. Preliminary report on the stratigraphy at the Psalmodi site, June 2002. Unpublished document, Psalmodi excavation archives.
- Goiffon, E. 1895. Psalmodi. *Revue du Midi* 18: 5–34, 239–268.
- Heath, S. and D. Yoon. 2001. A sixth-century tremissis from Psalmodi (Gard, France). *American Journal of Numismatics* 13: 63–80.
- Koenig, A. 1935. Die nürnbergischen Rechenpfennigschlager: ein Nachtrag. *Mitteilungen der bayerischen numismatischen Gesellschaft* 53: 4–16.
- Labrot, Jacques. 1989. *Une histoire économique et populaire du Moyen Age: les jetons et les méreaux*. Paris: Errance.
- La Tour, H. de. 1899. *Catalogue de la collection Rouyer*. Vol. 1, jetons et méreaux du Moyen Age. Paris: Ernest Leroux.

- . 1910. *Catalogue de la collection Rouyer*. Vol. 2, *jetons et méraux de la renaissance et des temps modernes*. Paris: Ernest Leroux.
- Mitchiner, Michael. 1988. *Jetons, medalets and tokens*. Vol. 1, *The medieval period and Nuremberg*. London: Seaby.
- . 1991. *Jetons, medalets and tokens*. Vol. 2, *The Low Countries and France*. London: Hawkins Publications.
- München, Staatliche Münzsammlung. 1989. *Rechenpfennige*. Vol. 1, *Nürnberg: signierte und zuweisbare Gepräge*. München: Staatliche Münzsammlung.
- Rivals, Georges. 1937. Psalmi. *Cahiers d'Histoire et d'Archéologie* 12: 287–299, 394–403, 611–632.
- Stahl, Alan M. 1993–94. Coins from the excavations at La Isabela, Dominican Republic, the first European colony in the New World. *American Journal of Numismatics* 5–6: 189–207.
- Weiller, Raymond. 1975. *La circulation monétaire et les trouvailles numismatiques du Moyen Age et des temps modernes au pays de Luxembourg*, vol. 1. Luxembourg: Ministère des Arts et des Sciences.
- Weiller, Raymond. 1989. *La circulation monétaire et les trouvailles numismatiques du Moyen Age et des temps modernes au pays de Luxembourg*, vol. 2. Louvain-le-Neuve: Séminaire de numismatique Marcel Hoc.

A Note on the Typology of the St. Patrick Coinage in its Restoration Context

PLATES 30–33

OLIVER D. HOOVER*

Danforth has proposed on the basis of a technological study that the St. Patrick “farthings” and “halfpence” were produced between 1667 and 1669 for Ireland under the Duke of Ormonde. This article argues that the numismatic typology of these pieces also supports a date in the 1660s, rather than the 1670s or 1640s as other scholars have suggested. The coins depict the key forms of authority restored under Charles II in 1660, episcopal Anglicanism and the monarchy, while also emphasizing Irish identity with the images of St. Patrick and the harp (shown in a form not widely used before the Commonwealth). These images, and the Latin inscriptions (when properly interpreted), are more appropriate to the first decade of the Restoration than either the period of the Irish Uprising in 1641–42 or the years of increasing anti-Catholic legislation during the 1670s.

Brian Danforth’s recent study of the new technology that allowed for the production of the St. Patrick “farthings” (Plate 30 no. 1) and “halfpence” (Plate 30 no. 2) has shown that these coins were most likely produced for Irish circulation in 1667 through 1669 by Pierre Blondeau, in fulfillment of an order made by James Butler, the Duke of Ormonde, who served his second term as Lord Lieutenant of Ireland from 1661 to 1669 (Breen 1987: nos. 198–219; Spink 2003: nos. 6568–6572B; Danforth 2002: 2371–2392).¹ This dating to the early part of the Restoration

* numlit@numismatics.org

1. The proper identification of the denominations is controversial. Although numismatists frequently refer to the copper St. Patrick coins as farthings and halfpence, they are almost double the expected weight for these denominations. The rare silver specimens may

period and the reign of Charles II (1660–1685) corrects previous proposed dates that connected the coinage to Charles I (1625–1649) during the Irish Uprising and the outbreak of the English Civil War in 1641 and 1642 (Simon 1810: 47–48; Crosby 1983: 136–137; Breen 1968: 215, 1987: 34), or to Charles II in the mid-1670s.² Although some of the technological and numismatic details of Danforth's study have been questioned, even his critics tend to agree that the chronological arguments are well founded and most likely correct (Manville 2005; Danforth 2005). Although the new dating seems hardly in need of additional support, we would like to suggest here that the close analysis of the numismatic typology, a form of evidence largely left untreated by Danforth and often not fully appreciated by earlier numismatists,³ also seems to point to the first decade of the Restoration rather than to the 1670s or 1641–1642.

INSCRIPTIONS

The inscriptions found on the “farthings” and “halfpence” of the St. Patrick coinage are fairly self-explanatory. Not only is the Latin simple and unencumbered by abbreviations, but each inscription is normally paired with a pictorial type related to its message. Thus, the obverse inscription FLOREAT REX (“Let the king flourish”), which is employed on both denominations, is associated with an image of David, the archetypal king, peacefully playing a harp.⁴ It may also be intended vaguely to recall the reverse inscription FLORENT CONCORDIA REGNA (“The kingdoms flourish through union”), used by Charles I on his pre-Civil War gold unite issues from the Tower mint (Spink 2005: 2688–2694, 2719 [Briot], 2721A [Briot]).⁵ This legend was resurrected for the initial unites struck by the restored Charles II in 1660 through 1662 and the gold broad of 1662, no doubt in part to illustrate continuity with the reign of his father (Spink 2005: 3301 [unite], 3304 [unite], 3337A [broad]). Like FLOREAT REX, the inscription ECCE GREX (“Behold

have been intended as shillings. For recent discussion of the problem, see Mossman (1993: 126); Manville (2005); Danforth (2005).

2. A general Restoration period date was already endorsed by A. Smith (1854–55) and followed by Vlack (1968: 200). The specific date of 1678 was initially proposed in light of the demonetization of the coinage by the Manx Parliament in 1679 (Nelson 1905: 16), but the discovery of the wreck of the yacht *Mary*, which included two St. Patrick “farthings”, provided a *terminus ante quem* of 1675, with the period 1672–1674 preferred (Dolley and Warhurst 1977).

3. Danforth (2002: 2372) briefly comments on typology in a single paragraph.

4. For the identification of the king as David and typological comparison with depictions of the Israelite king on a Nuremburg portugloser of 1641 and a Brugg psalmenpfennig of 1682, see Hodder (1987: 1017). Hodder also disputes the claim that the facial features of David on the St. Patrick coinage resemble those of Charles I (Breen 1968: 215; 1987: 34).

5. Unites of this type were continued at the Tower mint during its control by Parliament (1642–1649) and struck by Royalists at Chester in 1644 (Spink 2005: 2710–2712, 2722).

the flock”) of the “halfpence” is also relatively simple to comprehend, as it is paired with a type depicting St. Patrick surrounded by listeners—that is, his flock.

However, the proper understanding of QVIESCAT PLEBS on the “farthings” has become rather obscured. Walter Breen took this to mean, “Let the commoners be quiet”, with the interpretation that the inscription represents a warning against political songs and verses (Breen 1987: 34),⁶ thereby betraying his less than perfect grasp of Latin. Although the Latin verb *quiesco* and the related noun *quies* are the sources for the English word “quiet”, it is rare for them to be used with the primary modern North American meaning of “quiet” (i.e., making little or no noise). Instead, Latin *quiesco* and *quies* most commonly refer to a state of peace or rest in contrast to a state of activity (especially war) (*Oxford Latin Dictionary*, s.v. *quies* and *quiesco*). It is worth noting that in Middle English and the Early Modern English spoken and written in the seventeenth century, the word “quiet” also tends to have peace from war or other agitation as its primary meaning (*Middle English Dictionary*, s.v. *quiet*; *Oxford English Dictionary*, s.v. *quiet*).⁷ Thus, a better translation would be: “Let the people be at peace.”⁸ Such a translation would also make sense in conjunction with the type of St. Patrick driving the snakes and other creatures out of Ireland, symbolizing his triumph over the evil spirits of paganism that tormented the inhabitants of the island before their adoption of Christianity.

Even if Breen’s translation of QVIESCAT PLEBS were correct, it would make little sense in the historical context that he envisions. If the St. Patrick coinage was actually instituted to pay Irish Catholic Royalist troops, as he suggests, why should it chastise the people for political songs? Surely any Catholic Royalists would be singing indictments against the Puritan-influenced Parliament, not against the king. In any case, between 1641 and August 1642, when the English Civil War erupted, the main concern of Charles I was the problem of dealing with the Irish Uprising, which began in October 1641. It was only in 1643 that the Catholic Confederation of Kilkenny ceased hostilities with the Royalists under Ormonde and began the process of negotiating an alliance against Parliamentary forces. Since this alliance was not fully ratified until 1647, it is very unlikely that the St. Patrick coinage could have been considered before this date.

6. To support this view, Breen also imagined Pegasus as a symbol of poetry driven out by St. Patrick. For the refutation of the Pegasus interpretation, see the discussion of the St. Patrick types, below.

7. Out of thirty-one verses involving “quiet” in King James I’s Authorised Version of the Bible, all except three (Judges 16.2; Job 3.13; Eccl. 9.17) refer to peace and the absence of war.

8. This appears to be the understanding of Hodder (1987: 1017), when he translates the inscription as “Let the people be quieted”. It is also the sense taken by Spink (2003: 104), although the translation there is erroneously given as “He calms the common people”. To express Breen’s “Let the people be quiet” clearly in Latin would require something more like TACEAT PLEBS or SILEAT PLEBS.

With respect to the two inscriptions FLOREAT REX and QVIESCAT PLEBS found together on the “farthing” denomination, it may be that they should not be taken separately, but rather as two parts of the same sentence. On the royal silver coinage of Charles II produced after 1662, the obverse inscription (CAROLVS II DEI GRATIA) was regularly continued by the reverse legend (MAG BR FRA ET HIB REX).⁹ In the case of the St. Patrick “farthings”, the sentence would be of a type known to Latin grammarians as a disguised conditional sentence (Allen and Greenough 1988: 334), and would require translation as: “If the King should prosper, the people will be at peace.” Such a statement, directly linking peace for the people to the prosperity of the king, would have had special resonance in the Restoration period, and may also have been vaguely inspired by numismatic inscriptions from the reign of Charles I. This king’s gold angels, struck at the Tower and Edinburgh mints, had closely linked the prosperity of the king to the state of his subjects by proclaiming AMOR POPVLI PRAESIDIUM REGIS (“The love of the people is the safeguard of the king”) (Spink 2005: nos. 2682–2687; 2003: no. 5530).

The execution of Charles I and the creation of the Commonwealth under Oliver Cromwell in 1649 singularly failed to bring peace to the people of Great Britain and Ireland. In the decade that followed, repeated purges of Parliament, army mutinies, Penruddock’s Uprising (1655), and the Anglo-Spanish War (1654–1660) all conspired to prevent the return of peace after the Civil War. Of all the peoples in these difficult and kingless times, the Irish probably suffered the most. Cromwell’s campaigns against the Catholic Confederation and Royalist forces in Ireland (1649–1652) took on the character of a Puritan crusade, for not only did he desire to defeat the armies raised in the name of the executed Charles I and his exiled heir Charles II, but he also sought revenge for the Irish Uprising of 1641, in which Protestant planters (primarily Scottish Presbyterians) were slaughtered by repressed native Catholics. The Cromwellian conquest of Ireland was particularly bloody, and by the time of its conclusion thousands had been killed and dispossessed. Although the generally harsh policies of the English kings toward the Irish meant that even at the best of times peace was a scarce commodity in Ireland, it was almost totally absent from the island during the period of the Commonwealth.

In light of these many troubles suffered in the absence of a king, the implication of a St. Patrick coinage produced in the period from 1667 to 1669 seems clear:

9. For England, see Spink (2005: nos. 3328–3392); for Scotland, see Spink (2003: nos. 5604–5617). The Scottish silver dollars and fractions of 1675–1682 (Spink 2003: nos. 5618–5624) employ the reverse titles SCO ANG FR ET HIB REX. Although this type of legend continuation was never employed for Charles II’s English and Scottish copper issues, it is standard for both Armstrong’s Irish patent farthings of 1660–1661 and the Irish halfpence produced under patent by Armstrong and Legge in 1680–1684 (Spink 2003: nos. 6566, 6574–6575).

the return of Charles II as the rightful ruler of Great Britain and Ireland was tantamount to the return of peace to the people. While such sentiment makes good sense in the Restoration period (and particularly in the first decade, before the bloom had begun to come off the rose in earnest), it would be out of place in 1641 and 1642, when it had become obvious to all that the king was unable to guarantee peace in the land. Indeed, the political and religious policies of Charles I were the main causes of the discontent that allowed for the outbreak of the ruinous Civil Wars and the abolition of the monarchy for ten years. An association of Charles I with peaceful times in the early 1640s would have been especially unconvincing in Ireland, where the native inhabitants had suffered grievously from the so-called Thorough policy of Thomas Wentworth, Earl of Strafford, who served as the king's Lord Lieutenant of Ireland from 1632 to 1640, as well as from royal abuses such as the fraudulent sale of graces (Kearney 1959: 58–59). Strafford's replacement in 1641 by his close associate Ormonde seemed little better, and ultimately drove the Irish Catholics to armed rebellion.¹⁰

In contrast, Charles II at least made attempts to redress some of the wrongs of earlier royal and Commonwealth policy in Ireland. The king's Declaration of Breda (1660) and the Declarations of Indulgence (1662 and 1672) all prescribed the suspension of penal laws against Catholics, while the Act of Settlement (1662) restored about six hundred dispossessed Irish Catholics to their confiscated lands (*English Historical Documents* 8 nos. 1, 135, 274). Unfortunately, the Protestant-dominated Irish Parliament and the English Cavalier Parliament quashed all those initiatives out of a deep-seated fear of popery and a desire to retain lands seized under the Cromwellian settlement. Although the failure of the first Declaration of Indulgence to pass in 1663 and the promulgation of the Act of Explanation in 1665, which effectively prevented the repatriation of land to some 4,000 Irish claimants, came as great disappointments, the total failure of Charles's desire to promote toleration did not become apparent until the early 1670s. In retaliation for the king's second attempt to ratify a Declaration of Indulgence in 1671, Parliament enacted the first Test Act (1673), which banned Catholics from holding public office. From this point on, no further steps were taken by the king to improve the lot of his Irish Catholic subjects. English anti-Catholic hysteria and legislation only heightened as the 1670s dragged on, and Charles's lack of an heir made it increasingly likely that his Catholic brother would succeed him as James II. Thus, the relative religious calm and the token responses to Irish grievances in the 1660s, marking the reestablishment of some semblance of *quies* to Ireland, supports Danforth's dating of the St. Patrick coinage.

10. For the personal hatred of Ormonde by the members of the Confederate Catholics, see Edwards (2000).

KING DAVID AND THE HARP

In medieval and early modern England, it was a literary commonplace for sovereigns to be presented in terms of great biblical kings, especially King David.¹¹ While this ancient king of Israel was always very popular, he was particularly appropriate as an emblem of Charles II, with whom he was identified in Richard Allestree's *Sermon Preached at Hampton-Court on the Anniversary of His Sacred Majesty's Most Happy Return* (Allestree 1662: 18). Not only was David famous in Christendom as a legitimate king chosen by God to lead his people—therefore the archetype of the king ruling by divine right—but his early career also paralleled that of Charles's in several respects. David came to power after a period of misrule by his predecessor Saul, who had lost the support of Heaven through disobedience and committed suicide after a disastrous defeat by the Philistines. Saul's head was cut off by his enemies and sent around the country as a sign of their triumph (1 Samuel 13.5–14, 31.1–9). Charles II made his claim to the throne after his father's rule descended into the chaos of Civil War and the victorious Parliamentarians had him beheaded. The implied identification of Charles I as a failed King Saul was already made in Edmund Waller's *A Panegyric to my Lord Protector*, although condemned by the verse of the anonymous Anti-Panegyrist (Knoppers 2000: 105). Likewise, both David and Charles II were forced to spend time in exile before they could claim their respective thrones.¹²

Not only did David serve as a good biblical reflection of the restored Stuart king, but he was also an excellent foil for Cromwellian propaganda, which had

11. Henry VIII was often compared to Solomon and David. He appears seated next to the latter on the title page of Coverdale's Bible (London, 1535), and the illuminations accompanying Psalms 27 and 53 in his personal psalter depict him slaying Goliath and playing a harp as if he were David. A miniature by Hans Holbein the Younger casts him as Solomon receiving homage from the Queen of Sheba. Likewise, Elizabeth I is a distinctly Davidic ruler in sermons such as the anonymous *An Homily Against disobedience and wilfull rebellion* (London, 1571), William Leigh's *Queene Elizabeth paralleled in her Princely virtues with David, Josua and Hezekia* (London, 1612), and *David's Palme and Cedar, Showing the reward of the Righteous* (London, 1615), as well as in John Aylmer's *An Harborowe for Faithfull and True Subjects* (London, 1559). James I was compared to Solomon in the Epistle Dedicatory of Sir Francis Bacon's *The Great Instauration* (London, 1620), and personally invoked the kings Saul, David, Solomon, and Hezekiah in support of his brand of Divine Right kingship. See *A Speech, as it was delivered in the upper house of the parliament* (19 March 1603), 1 and 4; *A Remonstrance for the Right of Kings and the independence of their crownes* (1615), 66; and *A Speech in the Star Chamber* (20 June 1616). Charles I was also compared to David in the *Eikon Basilike* (London, 1649), although the main purpose of this work was primarily to cast him as a suffering Christ figure. Even Cromwell is compared to David in Edmund Waller's *A Panegyric to my Lord Protector* (1665).

12. For David's period as fugitive outlaw in the Judean wilderness prior to his elevation to the Israelite kingship, see 1 Sam. 22.1–30.31. From 1651 to 1653, as rebel king of Scotland, Charles II fought a losing war with Commonwealth forces, and from 1653 to 1660, he lived in exile in France, Germany, and the Spanish Netherlands.

tended to cast the subjects of Oliver Cromwell's Protectorate (1653–1658) as latter-day Israelites, with their Lord Protector as a new Moses leading them out of royal bondage.¹³ The use of David on the St. Patrick coinage only follows this model to its logical conclusion. If the subjects of Charles II were neo-Israelites, then as their recognized legitimate king he could be none other than a new David, ruling them with the support of God.

It is unclear whether King David here may also reflect the use of ideological elements that would later coalesce into the Anglo-Israelite religious movement. According to the several strains of Anglo-Israelite belief, the peoples of the British Isles were the literal descendents of the ten lost tribes of Israel, the harp of David was brought to Ireland by the prophet Jeremiah, and the royal house of Ireland was established through a daughter of David (see esp. Wilson 1840). This supposed Irish Davidic line was later transferred to Scotland and England through James I, the first Stuart king of England. Although Anglo-Israelite doctrine did not appear in mature form until the early nineteenth century, the beginnings of some of its bizarre historical tenets can be traced back as early as the 1600s. For example, in his *Rights of the Kingdom*, the Cambridge member of Parliament John Sadler (1649) was already arguing for the historical rather than allegorical identification of the English people with the Israelites, based on supposed similarities of customs and defective English/Hebrew philology. However, the present author has been unable to find evidence for contemporary claims of literal Davidic ancestry for the Stuarts. Instead, these seem to have originated in the nineteenth century, as a means of enhancing the genealogy of Queen Victoria (Glover 1861; Stephens 1877; Grimaldi 1885).¹⁴

In addition to being the most famous example of a ruler sanctioned by God in the Christian tradition, David was almost legendary for his skills as a musician. According to 1 Samuel 16.14–23, as translated into English in the Authorised Version of James I:

But the Spirit of the LORD departed from Saul, and an evil spirit from the LORD troubled him. And Saul's servants said unto him, Behold now, an evil spirit from God troubleth thee. Let our lord now command thy servants,

13. George Wither, *The Protector* (London, 1655); John Moore, *Protection Proclaimed* (London, 1655); Samuel Slater, *The Protector's Protection: Or, The Pious Prince guarded by a Praying People* (London, September 1658), 57–58; Henry Dawbeny, *History & Policie Reviewed, in the Heroick Transactions of his Most Serene Highnesse, Oliver, Late Lord Protector as they are drawn in lively Parallels to the Ascents of the Great Patriarch Moses* (London, April 1659); [Roger L'Estrange], *A True Catalogue, or An Account of the severall Places, and most Eminent Persons, in the three Nations and elsewhere, where, and by whom Richard Cromwell was Proclaimed Lord Protector* (London, September 1659).

14. In more recent times they have been resurrected in an anonymous pamphlet printed around 1990 by Anglo-Israelite monarchists on behalf of Queen Elizabeth II (Anonymous n.d.).

which are before thee, to seek out a man, who is a cunning player on an harp: and it shall come to pass, when the evil spirit from God is upon thee, that he shall play with his hand, and thou shalt be well. And Saul said unto his servants, Provide me now a man that can play well, and bring him to me. Then answered one of the servants, and said, Behold, I have seen a son of Jesse the Bethlehemite, that is cunning in playing, and a mighty valiant man, and a man of war, and prudent in matters, and a comely person, and the LORD is with him. Wherefore Saul sent messengers unto Jesse, and said, Send me David thy son, which is with the sheep. And Jesse took an ass laden with bread, and a bottle of wine, and a kid, and sent them by David his son unto Saul. And David came to Saul, and stood before him: and he loved him greatly; and he became his armourbearer. And Saul sent to Jesse, saying, Let David, I pray thee, stand before me; for he hath found favour in my sight. And it came to pass, when the evil spirit from God was upon Saul, that David took an harp, and played with his hand: so Saul was refreshed, and was well, and the evil spirit departed from him.¹⁵

Much of the Book of Psalms, which contains songs for accompaniment on the lyre, was also attributed to David. The texts of two songs composed by David are also given in 2 Samuel 22.1–23.7.

The image of David playing a harp (as opposed to a lyre) was a well-known religious motif that dates back as early as the tenth century and continued to be popular in the seventeenth century and beyond.¹⁶ An image of David strikingly similar to that found on the St. Patrick coinage appeared on a Nuremburg portugalozer of 1641 and on Brugg psalmenpfennige of the late seventeenth and eighteenth centuries (Plate 30 no. 3; Hodder 1987: 1017). The type of harp he plays on the St. Patrick coinage is clearly intended as an emblem of the Kingdom of Ireland, as indicated by the crown that hovers above it.

Breen argues that the form of this crown supports his theory that the series was produced at the Tower mint under Charles I in 1641 and 1642 (Breen 1968: 215),¹⁷ but overlooks the great stylistic similarity between the crown on the St. Patrick coinage and that which appeared on Thomas Armstrong's Irish farthings (1660–1661) struck under patent from Charles II (Spink 2003: no. 6566), as well as the emergency "Ormonde money" (Plate 30 no. 4) produced by Royalist forces in Ireland in 1643, 1644, and 1649 (Spink 2003: nos. 6544–6550, 6553–6554). Admittedly, the brass splasher normally applied to the crown on the St. Patrick coin-

15. For David as lyre/harp player, see also 1 Sam. 19.9–10.

16. For example, see illuminations in the Hunterian Psalter (c. 1170) and the bronze plaque from the Shrine of St. Mogue (tenth or eleventh century).

17. A different crown form appears on the farthings struck for Ireland by Richmond and Maltravers under patent from Charles I (1625–1644).

age as an anticounterfeiting device is reminiscent of a similar insert used for the English rose farthings of Charles I, but this is not a feature unique to his reign. It can also be found on an Irish private token of the late 1650s (Danforth 2002: 2396, *contra* Breen 1968: 215). Tin farthings with copper plugs were also issued under Charles II in 1684 and 1685 (Spink 2005: no. 3395).

Even without the addition of the crown, it would have been impossible for the average Englishman, Scotsman, and especially Irishman of the seventeenth century to avoid making a connection to Ireland through the image of the harp. This instrument was an old Irish heraldic symbol traceable at least to the thirteenth century, and was an important emblem of Irish national identity.¹⁸ As such, it was frequently repressed by English monarchs in an attempt to crush Irish separatism.¹⁹ Already in 1366, the Statutes of Kilkenny enacted by Edward III made it illegal to entertain harpers, and in 1603, Elizabeth I ordered the destruction of Irish harps and the hanging of practicing harpers by their harp strings, in an effort to end the use of the instrument and the performance of political songs to rally Irish rebels. Further measures were taken under Charles I in 1637, when the use of earlier Irish coinage, which regularly carried the reverse type of a harp, was prohibited, and all payments were required to be made in English coin (Simon 1810: 46).²⁰

The form of the harp's decoration on the St. Patrick coinage tends to point to its production under Charles II rather than Charles I. On Tudor royal coinages struck for Ireland, the harp was left plain and unadorned (Plate 30 no. 5) (Spink 2005: nos. 6472–6484B [Henry VIII], 6495–6499 [Mary Tudor], 6500–6501D [Mary and Philip], 6503–6511A [Elizabeth I]), but on the Irish shillings and sixpence issued by James I from 1603 to 1607, it was generally depicted with a decorative eagle's head (Plate 30 no. 6; Spink 2003: nos. 6512–6517). The harp was left plain, except for scrollwork, on his Scottish (Spink 2003: nos. 5463–5470, 5501–5508) and English (Spink 2005: nos. 2608–2614, 2618–2626, 2632–2650A, 2652–2658A, 2664–2670) coinages with quartered arms reverses (Plate 31 no. 7), and on English farthings struck by Lords Lennox and Harrington (Plate 31 no. 8) under royal patent from 1613 to 1625 (Spink 2005: nos. 2674–2676 [Harrington], 2678–2681; 2003: 6520–6521 [Harrington], 6522–6523 [Lennox]). The patent farthings were only authorized for Irish circulation in 1622. A similar harp

18. The harp appears as the heraldic charge of the *Roi d'Irlande* in the Wijnbergen Roll (a Flemish roll of arms dated c. 1280).

19. For contemporary descriptions of the Irish harper as the inciter of rebellion, see John Derrick, *Image of Ireland, with a Discovery of Woodkern* (London, 1578); Edmund Spenser, *A View of the Present State of Ireland* (c. 1596); Sir William Herbert, *Croftus Sive de Hibernia Liber* (c. 1590).

20. For the absence of a true Irish national coinage between the reign of Elizabeth I and Charles II, see Danforth (2002: 2386–2387).

with scrollwork appears on most of the English heraldic types of Charles I (Plate 31 no. 9) and the patent farthings produced by Lords Maltravers and Richmond (Plate 31 no. 10) in 1625 through 1644 (Spink 2005: nos. 2688–2695, 2710–2712), but on the royal issues, sometimes the harp is adorned with the Jacobean eagle's head (Plate 31 no. 11). However, on Scottish coins produced for Charles I at the Edinburgh mint under the well-known French engraver Nicholas Briot and his son-in-law John Falconer, the harp decorated with a semi-nude and often winged female figure (Plate 31 no. 12), familiar from the St. Patrick coinage, first appears (Spink 2003: nos. 5531–5539, 5552–5574). This form of harp also surfaces on the quartered arms types (Plate 32 no. 13) struck under Briot at the Royalist mint of York (1643–1644) before the city's fall to Parliamentary forces (Spink 2005: nos. 2863–2877).

Since Briot's harp appears to have been a strictly Scottish (and later north English) form until the end of the Civil War, it is difficult to see how it could have influenced the typology of a supposed issue of St. Patrick coinage at the Tower mint in 1641 and 1642. This form appears to have had no effect on the royal emissions of the Tower mint under either Charles I or Parliament (1642–1649), yet it suddenly appears on both the Commonwealth issues of 1649 through 1660 (Plate 32 no. 14; Spink 2005: nos. 3208–3223) and the portrait coinage of Oliver Cromwell as Lord Protector produced in 1656 through 1658 (Plate 30 no. 15; Spink 2005: 3224–3230). This new lease on life for Briot's harp at the Tower mint may be explained by the appointment of Thomas Simon (also spelled Symond) as Chief Engraver in 1645, who was given the responsibility for designing the Great Seal of the Commonwealth and dies for its coinage.

As Simon had worked under Briot at the Tower mint, it seems quite likely that he may have learned the gracefully decorative harp form from his master, and simply reused it when he took up his position under the Commonwealth. The Briot-style harp is prominent on Simon's two Great Seals of the Commonwealth of England, produced in 1649 and 1651, as well as on the Great Seal of the Lord Protector of 1653 (Figs. 1 and 2). It is probably from these official government seals that the heraldic typology and the form of the harp on contemporary coinage were derived. Similarly, following the Restoration, Thomas Simon engraved the Great Seal of Charles II, again giving prominence to the harp with female figure, but now also adding a crown hovering above it (Fig. 3). An identical harp was also used for the Irish arms on the initial hammered Restoration issues (Plate 32 no. 16) of 1660 through 1662 (Spink 2005: nos. 3301–3327). Simon, who had been a Parliamentarian from early on, was replaced by the Flemish medallist Jan Roetiers in 1663, but the form of harp decorated with a semi-nude female figure lived on, perhaps because it had been incorporated into the royal seal and had become a well-entrenched form after a decade of use. It was continued on the heraldic royal



FIGURE 1. Great Seal of the Commonwealth of England, engraved by Thomas Simon, after George Vertue.

coinage of England (Spink 2005: nos. 3328–3383) and Scotland (Spink 2003: nos. 5604–5623) for the remainder of the reign of Charles II (Plate 32 no. 17) as well as on Irish farthings and halfpence struck by Thomas Armstrong and George Legge (Plate 32 no. 18) under patent from the restored monarch (Spink 2003: nos. 6566, 6574–6575). The Briot style of harp would remain the standard badge of Ireland on the coinages of the restored Stuarts, as well as the issues of William of Orange (1689–1702), the house of Hanover (1714–1901) (Plate 32 no. 19), and the coins of Edward VII (1901–1910) and George V (1910–1936) (Plate 32 no. 20) of the



FIGURE 2. Great Seal of the Lord Protector, engraved by Thomas Simon (1653), after George Vertue.

house of Windsor (Saxe-Coburg-Gotha).²¹ After the Government of Ireland Act (1920) and the establishment of Saorstát Éireann, the Irish Free State, this long-enduring image was replaced by much plainer forms on both autonomous Irish

21. Students of coinages used in the colonies of British North America will also be very familiar with this form of the harp, not only from the Hanoverian royal issues intended for Ireland and their many contemporary counterfeits, but also from Holt's "Plantation" halfpence (Breen 1987: nos. 77–82), Wood's Hibernia coinage (Breen 1987: nos. 143–178; Spink 2003: nos. 6600–6604), Virginia halfpence (Breen 1987: nos. 180–183), Roche's VOCE POPULI coppers (Breen 1987: nos. 220–236), and a few New Hampshire coppers (Breen 1987: no. 708).



FIGURE 3. Great Seal of Charles II, engraved by Thomas Simon, after George Vertue.

coinage (Plate 33 nos. 21 and 22; Spink 2003: nos. 6625–6645) and the United Kingdom issues with heraldic types (Plate 33 no. 23) of the Windsors (Spink 2005: nos. 4037–4038 [George V], 4078–4079, 4106 [George VI], 4136–4137, 4143, 4304, 4334, 4336, 4590 [Elizabeth II]).²²

The Briot-style harp probably found its way onto the St. Patrick coinage either in imitation of the Great Seal of Charles II or through Pierre Blondeau's previous work with both Nicholas Briot and Thomas Simon. Blondeau had learned the art

22. The harp on the autonomous Irish coinage is modeled on the Brian Boru harp housed in Trinity College, Dublin. The Briot-style harp was briefly reprised for a gold 5-pounds issue of Elizabeth II in 2002 (Spink 2005: no. 4401).

of die engraving from Briot, and had collaborated with Simon to produce the celebrated milled coinage of Oliver Cromwell (Nathanson 1975: 26–29; Spink 2005: nos. 3224–3230).

ST. PATRICK

The types employed for the reverses of the “farthings” and “halfpence” depict two different major events from the life of the patron saint of Ireland, elements of which have been derived from a 1619 engraving by Leonard Gaultier. Although it has been suggested that the “farthing” reverse type was copied from private tokens produced by Richard Grenwood of Dublin, dated to c. 1648–1649 by Simon, in reality, this series is not likely to predate 1653, and probably falls as late as 1676 to 1679 (Danforth 2002: 2372). On the “halfpence”, St. Patrick is shown in full episcopal attire, holding a shamrock and speaking before eight listeners. This scene represents the triumph of the saint over Irish paganism at Tara, traditionally placed on Easter Sunday of 433. On this day, he is said to have convinced the assembled Irish chieftains, including the High King Leoghaire, of the truth of the important Church dogma of the Blessed Trinity by comparing it to the three leaves of the shamrock. The “farthing” type is also related to St. Patrick’s victory over paganism in Ireland, for it depicts him, again in his episcopal vestments, standing before a church (possibly St. Patrick’s Cathedral in Dublin) and driving snakes and other creatures symbolic of evil out of Ireland.

With respect to the creatures shown fleeing before St. Patrick on the “farthings”, Breen tries to force the type to fit his mistaken understanding of the surrounding inscription QVIESCAT PLEBS. He claims that in addition to snakes, the saint also drives out the mythological winged horse Pegasus, a supposed symbol of poetry. Thus, he suggests, St. Patrick visually urges the people of Ireland to keep silent (Breen 1987: 34). However, close inspection of the apparent Pegasus under magnification makes it clear that the beast is actually a winged dragon, a creature much more appropriate to the miracle depicted. All the other creatures depicted above the dragon (from bottom to top, a lizard, a snake, and a bird) are also known forms that the evil spirits are supposed to have taken when St. Patrick drove them out of Ireland.

One could argue that the use of St. Patrick as a type for Irish coinage might be appropriate to just about any period, but in the seventeenth century, his type on a semi-official coinage seems to make better sense in the Restoration period, rather than at the height of the Irish Uprising and the outbreak of the English Civil War. The policies pursued under earlier English monarchs in Ireland were largely aimed at annihilating Irish national and religious identity while guaranteeing the ascendancy of the Protestant Anglo-Scottish planters and greater royal control. As part of these policies, distinct Irish symbols and emblems such as the harp (discussed above) were often forbidden by the government. In this repressive atmosphere, it is hard to imagine the typological use of St. Patrick, the patron saint of Ireland,

having official sanction in 1641 and 1642. Instead, it seems more reasonable to place the type of St. Patrick in the context of the Restoration, during which period Charles II vainly attempted to reduce the odium of the penal laws passed to repress Irish nationalism and Catholics in general.

The depiction of the saint's two most famous victories over Irish paganism on the St. Patrick coinage is probably no accident, and may be intended in part as parallels for the triumph of Charles II over the hated forces of the Cromwellian order in Ireland. Just as St. Patrick had driven out the snakes, so too had Charles attempted to drive out or at least contain the Puritan oppressors of the Irish.

Although St. Patrick was widely recognized as a specifically Catholic saint, a fact that seems to have been largely responsible for the early misattribution of the coinage to the Irish Uprising and the Catholic Confederacy in the 1640s (Simon 1810: 47–48; Crosby 1983: 136–137),²³ it has been suggested that the miter and vestments worn by St. Patrick on both types are actually those of an Anglican rather than Catholic bishop (Danforth 2002: 2372). Such an anachronistic form of dress may have been a means of avoiding potential scandal over the use of emblems associated with popery, which would not be surprising in light of the increasing English anti-Catholic hysteria over the course of the 1660s.²⁴ However, one wonders whether the saint's episcopal attire might not also have been informed by the early religious policies of the Restoration period, which focused heavily on reestablishing the episcopal (as opposed to presbyterian) church hierarchy as the sole legitimate authority in matters of religion.

During the reign of Charles I, the elaborate ritual preferred by the Church of England and its bishops under William Laud, the Archbishop of Canterbury (1633–1645), had served to antagonize Puritan sentiment, which considered the episcopal Anglican church to be edging dangerously close to popish usage. The situation became so difficult that attempts to impose the Anglican Book of Common Prayer and episcopal authority on the Scottish Kirk ultimately forced the king to engage in a series of unsuccessful Bishop's Wars (1637–1640). The disastrous results of these wars turned public opinion strongly against Laud's authoritarianism, and he was impeached by the Long Parliament at the end of 1640. Five years later, when the English Civil War had been all but lost by Charles I and the Royalists, the

23. A cursory comparison of the extremely well-made St. Patrick coinage with the crude issues known to have been produced by the Catholic Confederacy (Spink 2003: nos. 6555–6559) make it a certainty that the Catholic forces of the Irish Uprising cannot have been responsible for the production of the former.

24. Recurrent waves of anti-Catholic sentiment had plagued English religio-political thought since the break between Henry VIII and Rome led to the creation of the Church of England. A new crescendo of intolerance was reached when Catholic religious leaders were blamed for both the Fire of London in 1666 (*Calendar of State Papers, Domestic, Charles II*: 242; Steele 1910: 3479) and English failures in the Anglo-Dutch War (1667) (*Diary of Samuel Pepys*: vol. 8, 269–270).

archbishop was executed, and in 1646, the episcopal organization was completely abolished and replaced with the presbyterian form.

Remaining true to the old Jacobean statement “No bishop, no king”, and (not surprisingly) keeping faith with the opinion that the best form of government for church as well as state was that of a single individual (Keeble 2002: 111–112), Charles II brought the episcopal organization back with him when he was restored to the throne in 1660. The end of this year saw the consecration of new bishops to fill the many vacancies created during the Commonwealth and Protectorate. In 1661, the Cavalier Parliament began the promulgation of a body of legislation known as the Clarendon Code (1661–1665), which simultaneously supplied the legal framework for the supremacy of the episcopal Church of England and placed heavy restrictions on those failing to conform to its dictates.

Considering the close interconnection between the restoration of royal and episcopal authority—already recognized by authors of the early 1660s—it is perhaps no accident that both king and bishop are also paired on the St. Patrick coinage. This pairing seems even less coincidental in light of Richard Allestree’s *Sermon*, in which he remarks:

When men once depart from Uniformity...why may not divisions be as infinite as mens phansies?... It is *one God, one Faith, one Worship* makes *hearts one*. Hands lifted up together in the Temple they will joyn and clasp: and so *Religion* does fulfill its name *a religando*, binds Prince and subjects all together, and they who thus do *seek the Lord their God*, will also *seek David their King* (Allestree 1662: 17–18).

Here Allestree not only links uniformity of religion under a single episcopal hierarchy (as enshrined by the 1662 Act of Uniformity) to kingship, but he also makes a subtle comparison of Charles II to King David. A similar idea of the ruler bound to his subjects may also be reflected in the FLOREAT REX and QUIESCAT PLEBS inscriptions, if they are indeed intended to be read together, as suggested above. While the specific content of Allestree’s *Sermon* may not have directly influenced the typology of the St. Patrick coinage, which was probably produced some five or six years after its publication, it seems probable that very similar sorts of religio-political connections and associations were still current when the iconography and legends for the “farthings” and “halfpence” were developed.

If the St. Patrick coinage did result from a request made by Ormonde in 1667, as Danforth has argued, a further dimension may be added to the interpretation of St. Patrick in his full episcopal attire. Serving as Lord Lieutenant of Ireland for the second time (1661–1669), Ormonde was instrumental in restoring the bishops to the Church of Ireland and enforcing the Acts that supported their authority in the early 1660s (McGuire 1983). As part of a policy “to persuade Catholics of an appropriate social standing ...of the importance of a sense of duty [i.e., to the king] so that they would keep the lower orders in check” (Gillespie 2000: 111), Ormonde

also became deeply involved in Catholic politics, by supporting Fr. Peter Walsh and his Irish Remonstrance, which proclaimed Catholic loyalty to Charles II while disavowing papal authority in the civil affairs of Ireland. Together Ormonde and Walsh assembled the Catholic clergy and bishops at Dublin in 1666, in an attempt to convince them to accept the Remonstrance and become loyal subjects of the king (Miller 1973: 95). While this meeting ultimately failed and the Remonstrance was rejected by the majority, the position of the Remonstrants continued to be pressed by Ormonde even as late as 1670. Considering the apparent importance of this issue to the Lord Lieutenant, one wonders whether the typology of the St. Patrick coinage might also have been at least partially intended to advertise the Remonstrant position that it was possible for Irish Catholics to be true and loyal subjects of the English king.

CONCLUSION

In light of their typology, the St. Patrick “farthings” and “halfpence” can be seen as the Restoration coinage par excellence, for they depict the two key forms of church and state (episcopal Anglicanism and the monarchy) eliminated during the English Commonwealth but restored with the return of Charles II in 1660. The general legitimacy of these same institutions is also enhanced by presenting them in terms of their respective great biblical and early Christian exponents, St. Patrick and King David. On a second level, they are also cast with an eye to creating an air of local Irish legitimacy. David plays no ordinary harp, but rather the old and well-known emblem of the Irish kingdom, while the bishop on the reverse is no ordinary church leader but St. Patrick, the ancient episcopal patron of Ireland. In short, the coinage serves to advertise the happy return of the old and legitimate (if not historically friendly) regime to Ireland after almost two decades of chaos and destruction.

ACKNOWLEDGMENTS

The author would like to thank Brian Danforth and Philip Mossman for their comments on an earlier version of this paper. Thanks are also due to Steven Frank, Louis Jordan, William Nipper, and especially Robert Hoge and Olga Less for assistance in locating illustrative material.

LIST OF COINS ILLUSTRATED

1. AE St. Patrick farthing (ANS 1945.42.630).
2. AE St. Patrick halfpenny (ANS 1945.42.634).
3. AR Psalmenpfenning, Brugg, eighteenth century (UBS Auction 63, lot 1098).
4. AR Ormonde half-crown, Ireland (ANS 1925.43.2).
5. AR groat, Ireland, Henry VIII (ANS 1954.203.63).
6. AR shilling, Ireland, James I (ANS 1943.102.187).
7. AV unite, London, James I (ANS 1980.109.550).

8. AE Harrington patent farthing, Ireland (ANS 1940.113.462).
9. AR crown, London, Charles I (ANS 1977.285.4).
10. AE Richmond patent farthing, Ireland (reproduced from the original held by the Department of Special Collections of the University of Notre Dame).
11. AV unite, London, Charles I (ANS 1954.237.499).
12. AV unite, Edinburgh, Charles I (ANS 1954.237.501).
13. AR half-crown, York, Charles I (ANS 1944.21.2).
14. AV unite, Commonwealth 1651 (ANS 1946.89.120).
15. AV broad, London, Commonwealth 1656 (ANS 1906.115.8).
16. AR groat, London, Charles II (ANS 1963.6.3).
17. AV guinea, Charles II 1683 (ANS 1937.56.26).
18. AE Armstrong and Legge patent halfpenny, Ireland, 1682 (ANS 1940.113.464).
19. AE halfpenny, Ireland, George II 1750 (ANS 1940.113.438).
20. AR half-crown, George V 1925 (ANS 1933.999.666).
21. Cu-Ni florin, Ireland, 1963 (ANS 1981.72.7).
22. Bimetallic 1 euro, Ireland, 2002 (ANS 2002.24.23).
23. Cu-Ni half-crown, London, Elizabeth II 1970 (ANS 1973.181.8).

REFERENCES

- Allen, J. H., and J. B. Greenough. 1988 [1903]. *Allen and Greenough's new Latin grammar for schools and colleges*, rev. ed. by J. B. Greenough, G. L. Kittredge, A. A. Howard, and B. L. D'Ooge. New Rochelle: Caratzas [reprint].
- Allestree, Richard. 1662. *Sermon preached at Hampton-Court on the anniversary of His Sacred Majesty's most happy return*. London: n.p.
- Anonymous. n.d. *Elizabeth II is heir to great Bible promises*. [Newcastle?]: Newcastle Revival Center.
- Breen, W. 1968. Comment on St. Patrick halfpence and farthings. *CNL* 22: 16–19.
- Breen, W. 1987. *Walter Breen's complete encyclopedia of U.S. and colonial coins*. New York: Doubleday.
- Calendar of State Papers*: M. Green, ed. 1860–95. *Calendar of state papers, domestic series, 1658–1670*. London: Longman.
- Crosby, S. 1983 [1875]. *The early coins of America*. New York: Burt Franklin.
- Danforth, B. 2002. St. Patrick coinage. *CNL* 121: 2371–2402.
- Danforth, B. 2005. St. Patrick coinage revisited. *CNL* 127: 2786–2796.
- Diary of Samuel Pepys*: R. Latham and W. Matthews, eds. 1974. *The diary of Samuel Pepys*, vol. 8. London: G. Bell and Sons.
- M. Dolley and M. Warhurst. 1977. New evidence for the date of the so-called 'St. Patrick's' halfpence and farthings. *Irish Numismatics* 59: 161–163.

- Edwards, D. 2000. The poisoned chalice: the Ormond inheritance, sectarian division and the emergence of James Butler, 1614–1642. In: T. Barnard and J. Fenlon, eds., *The Dukes of Ormonde, 1610–1745*, pp. 55–82. Woodbridge: Boydell Press.
- English Historical Documents*: A. Browning, ed. 1966. *English historical documents*, vol. 8: 1660–1714. London: Oxford University Press.
- Gillespie, R. 2000. The religion of the first Duke of Ormond. In: T. Barnard and J. Fenlon, eds., *The Dukes of Ormonde, 1610–1745*, pp. 101–113. Woodbridge: Boydell Press.
- Glover, F. R. A. 1861. *England the remnant of Judah*. London: Rivingtons.
- Grimaldi, A. B. 1885. *The Queen's royal descent from King David the Psalmist*. London: Robert Banks.
- Hodder, M. J. 1987. The St. Patrick token coinage: a re-evaluation of the evidence. *CNL* 77: 1016–1018.
- Kearney, H. F. 1959. *Strafford in Ireland, 1633–1641: a study in absolutism*. Manchester: University of Manchester Press.
- Keeble, N. H. 2002. *The Restoration*. Malden: Blackwell Publishers.
- Knoppers, L. 2000. *Constructing Cromwell: ceremony, portrait, and print, 1645–1661*. Cambridge: Cambridge University Press.
- McGuire, J. I. 1983. The Dublin convention, the Protestant community and the emergence of an ecclesiastical settlement in 1660. In: A. Cosgrove and J. I. McGuire, eds., *Parliament and community*, pp. 121–146. Belfast: Appletree Press.
- Manville, E. 2005 [2002]. Review of Brian J. Danforth's paper on St. Patrick coinage. *CNL* 127: 2781–2785 [reprint].
- Middle English Dictionary*: R. E. Lewis, ed. 1985. *Middle English dictionary*, fasc. Q1. Ann Arbor: University of Michigan Press.
- Miller, J. 1973. *Popery and politics in England, 1660–1688*. Cambridge: Cambridge University Press.
- Mossman, P. 1993. *Money of the American colonies and confederation*. New York: American Numismatic Society.
- Nathanson, A. J. 1975. *Thomas Simon: his life and work, 1618–1665*. London: Seaby.
- Nelson, P. 1905. *The coinage of Ireland in copper, tin, and pewter, 1460–1826*. Liverpool: W. M. Murphy.
- Oxford English Dictionary*: J. A. Simpson and E. S. Weiner, eds. 1989. *Oxford English dictionary*, 2nd ed. Oxford: Clarendon Press.
- Oxford Latin Dictionary*: P. G. W. Glare, ed. 1983. *Oxford Latin dictionary*. Oxford: Oxford University Press.
- Sadler, J. 1649. *Rights of the kingdom, or, customs of our ancestours*. London: Richard Bishop.
- Simon, J. 1810. *Simon's essay on Irish coins and currency of foreign monies in Ireland*,

- 2nd ed. Dublin: G. A. Procter.
- Smith, A. 1854–55. On the copper coin commonly called St. Patrick's. *Proceedings and Transactions of the Kilkenney and Southeastern Archaeological Society* 3.
- Spink standard catalogue of British coins. 2003. *Coins of Scotland, Ireland, and the Islands*, 2nd ed. London: Spink & Son.
- Spink standard catalogue of British coins. 2005. *Coins of England and the United Kingdom*, 40th ed. London: Spink & Son.
- Steele, R. 1910. *A bibliography of royal proclamations of the Tudor and Stuart sovereigns*, vol. 1. Oxford: Clarendon Press.
- Stephens, J. C. 1877. *Genealogical chart, shewing the connection between the House of David and the royal family of Britain*. Liverpool.
- Vlack, R. 1968. Die varieties of St. Patrick halfpence. *CNL* 21: 1–4.
- Wilson, J. 1840. *Lectures on our Israelitish origin*. London: J. Nisbet.

Silver Merchants and Assayers' Marks: The *Visita* of 1729–30 and the Reform of the Mexican Mint

PLATE 33

CHRISTOPH ROSENMÜLLER*

The inspection (*visita*) of the Mexico City mint in 1729–30 brought about crucial changes in coin production. Previously, the silver merchants produced mintage in collusion with crown officials. The monarch auctioned off various offices while the officeholders recouped their investments by retaining a substantial part of the mint profits. After the *visita*, the crown professionalized the bureaucracy and introduced machinery, raising the coinage quality.

From 1685 through 1705, the assayer Manuel de León struck his mark “L” on Mexican coins, followed by the “J” of José de León and the “D” of José de Rivas. Only the “F” of assayer Francisco de la Peña Flores survived the *visita*. In 1733, Manuel de León’s initial “M” joined de la Peña’s mark in the combination “MF,” reflecting León’s superior professional standing.

A debate has long raged among scholars over the causes of the estrangement between the elites of colonial Mexico and the Spanish metropolis—the growing chasm between the rulers and the ruled that ultimately resulted in the War of Independence (1810–1821). One group of scholars sees the war as the culmination of an age-old struggle between the Castilian monarchy and its subjects, a struggle evident in Spain even before the conquest of the Americas. Other historians have argued for a more recent “revolution in government,” carried out since 1765 by the Bourbon king Charles III, which strongly fed into the colonial elites’ dissatisfaction (Phelan 1967; Brading 1971: 33–96; Tutino 1976: ch. 5–7; Pietschmann 1972; Lynch 1969: 273–280).

* Department of History, Middle Tennessee State University, Murfreesboro, TN 37132, USA (rosenmul@mtsu.edu).

By investigating the causes and results of the inspection (*visita*) of the Mexico City mint (1729–30), this article argues that royal reforms began earlier than 1765. The new footing of the mint that ensued from the *visita* reduced the spoils that colonial elites traditionally siphoned off from this pivotal institution. While some historians and numismatists have largely assumed that metropolitan law was closely adhered to in the colonies (Burzio 1952, 1958; González Gutiérrez 1997), this article will show that a gaping gulf existed between the letter of Spanish laws and the actual practice of their administration in the New World. The mint inspection and the resulting reforms reduced this difference. This analysis will also amend our knowledge of mint procedures and personnel for the era, especially as concerns the various assayers. The assayer (*ensayador*) supervised and guaranteed the weight and the purity of the mintage, and the law required him to imprint his hallmark on the coins. The assayer's mark consisted usually of the first letter of one of the surnames or the given name of the official (Menzel 2004: 6). Ideally, by means of this mark, crown prosecutors could track the originators of fraudulent coinage. For numismatists, the mark is often vital for identifying and cataloging Spanish colonial coinage, especially coinage of “cob” or *macuquina* manufacture, which is often of shoddy quality.

THE INSPECTION OF THE MINT, 1729–30

At the beginning of the eighteenth century, three great silver merchants competed for access to the two furnaces in the mint of Mexico City: Nicolás López de Landa; Luis Sánchez de Tagle, first Marquis of Altamira; and Sebastián Rodríguez de Madrid. The furnaces melted down silver bars to manufacture coin planchets. The planchets were then struck into coins. Most of the silver arrived from great mining districts such as Zacatecas and Guanajuato, located in the north of New Spain, as Mexico was then known.

In 1702, the first titular viceroy of the new Bourbon dynasty, the tenth Duke of Albuquerque, arrived in New Spain. The silver merchant Nicolás López de Landa quickly entered into an alliance with the Spanish grandee. Their collusion, while lucrative to colonial society, adversely affected both the crown's interest in the mint and the important transatlantic trade. López de Landa and others opposed Sánchez de Tagle's status as the official representative of the Spanish trade oligopoly. Under the law, any import to Spanish America via the Atlantic had to travel on the fleet that sailed annually from Andalusia, and the crown prohibited any other overseas commerce on this route. López de Landa and many other colonial Mexicans resented these impractical restrictions on trade, and joined the viceroy in operating contraband trade with the seafaring European countries and other Spanish colonies. The conflict between the viceroy and Sánchez de Tagle escalated into a violent struggle over the wedding of Sánchez de Tagle's nephew, which over the course of the conflict saw not only the confinement of the great

merchant and his cousin in the grim dungeons of the port fortresses, but also the calamitous death of the bride.

In 1703, López de Landa gained ground for his cause when the viceroy cancelled Sánchez de Tagle's access to the mint, in the course of the merchant's imprisonment. However, Sánchez de Tagle could still count on the political support of both the corporation of Spanish merchants (the *consulado*) in Seville and his own representative at the court (Rosenmüller 2003: 56–64). The viceroy released Sánchez de Tagle from prison, and in 1704 a *real cédula* (a royal order usually issued by the Council of the Indies) called on the viceroy to reinstate him at the mint. Nevertheless, Alburquerque continued to maneuver against Sánchez de Tagle's privileges, suggesting repeated inspections of all silver bankers to enforce the proper taxation of all silver. This measure, rejected by Madrid, would have given the viceroy further ways to harass Sánchez de Tagle (*real cédula*, Madrid, 5 August 1705, AGI *legajo* Mexico 401). In 1706, López de Landa tried to outmaneuver his rivals at the mint by offering to the Council of the Indies thirteen maravedís¹ more per mark struck from the king's silver. From this, the monarch stood to gain 28,000 pesos. Sánchez de Tagle, however, matched the offer, and López de Landa could not edge out his enemy. In fact, a *real cédula* in 1707 gave Sánchez de Tagle the right to mint all silver belonging to the royal fisc for a period of two years—at his competitors' expense (King to Alburquerque, 9 August 1707, AGN RCO, vol. 50, exp. 29).

In 1717, the crown rewarded Sánchez de Tagle's cousin with the rights to the exclusive operation of one of the furnaces for two years, leaving his two rivals sharing the other. López de Landa, politically the weakest of the three silver minters, faced an uphill battle at the mint following this defeat. In 1727 he quit, transferring his rights to the Fagoaga family (Bertrand 1999: 346).

The continuous conflict over control of the mint, culminating in López de Landa's withdrawal, brought the problem to the attention of the crown. Since the late seventeenth century, the monarchy had tried to increase the proceeds from its most precious American colony. To that end, the crown had already seized the administration of the sales tax (*alcabala*) from the local oligarchy in the city of Puebla in 1695. Toward the end of the War of the Spanish Succession (1701–1714), a series of *visitas* of the treasuries and the high court shook the colony, putting it under closer supervision by the crown (Bertrand 1999: 286–290, 325–333, 405–407). In 1726, with the appointment of José de Patiño, the resolute secretary of the navy and Indies, the crown next targeted for reform the lucrative Mexican mint. Madrid had long known that the mint officials and silver merchants colluded to circumvent legal restrictions, pocketing chunks of the silver mines' wealth. So far, the elites of New Spain had generally been able to withstand royal attempts to

1. Thirty-four maravedís equal one peso.

secure more proceeds for the crown. Patiño, however, was determined to bring to heel the silver merchants and mint officials in order to run the institution under tighter royal control.

In a *real cédula* dated 19 June 1728, the king deplored the inferior quality of coinage from the Mexico City mint, stating that the silver alloy, size, stamp, and graining on the edge did not meet the legal standard (*Memorial ajustado*: 2 recto). The king referred here to the poor quality of the macuquinas, or cob coinage, issued by the Mexican mint (Plate 33 no. 1). These coins had arrived in Spain via the fleet for over a century. The crown lamented the fact at this date solely to justify the impending seizure of the mint. On 30 June 1728, Patiño drew up a confidential letter to the viceroy, outlining the “malice” reigning in the mint and ordering an inquiry, stating that the law should be enforced and the culprits punished accordingly (*Memorial ajustado*: 3 recto, 4 verso).

On 7 February 1729, the viceroy ordered the judge (*oidor*) of the Mexican High Court, José de Fernández y Veytia Linage, to join him and the civil prosecutor (*fiscal de lo civil*) of the High Court in the inspection of the mint (*Memorial ajustado*: 3–4). One month later, Fernández y Veytia Linage supervised the inspection of the institution. His task was to establish if the officials observed the laws while striking coins. The *Recopilación de las Indias*, the collection of laws governing Spanish America, endorses the general powers of the assayers without proffering details (Sánchez Bella 1992: libro 8, título 3). The assayers needed to demonstrate their skills in an examination and deposit funds with the mint as an insurance against embezzlement. Frequent inspections monitored the assayers’ activities, and the viceroys were directed to punish any deviations severely (Sánchez Bella 1992: leyes 10–23).

The inspector Fernández y Veytia Linage interrogated several witnesses as to whether the officials adhered to the laws: Did the treasurer collect kickbacks from lower officials? Did the assayer supervise the mintage adequately? All witnesses answered the first question in the negative; but as to the second question, several agreed that the royal officials barely played a role in the minting process. Simón de Carragal, who sat on the Tribunal of Accounts as an auditor of the books of the royal exchequer, declared that he had on occasion accompanied the treasurers of Luis Sánchez de Tagle “as a friend” (*Memorial ajustado*: 52 recto). He testified that Sánchez de Tagle’s minions adjusted the alloy of the silver to meet legal requirements in the absence of the assayer or any other royal officials. They merely paid a fee to the convent of the Holy Desert, which held the office of chief assayer as proprietor and appointed this official.² The witnesses Juan Antonio Ibáñez and

2. “...con este motivo viò, que sacaban de la Sala de el Thesoro la Plata, que no era de toda ley, por si solos, y sin intervencion de algunos de los Oficiales Mayores, y la llevaban à la afinacion ... sin intervencion del Ensayador, ni otra persona, ni Ministro de la Casa, ni en las reducciones; y que pagaban al Santo Dieserto sus derechos...” (*Memorial ajustado*: 52 verso).

José de los Reyes, both clients of the silver barons, seconded Carragal's view that the assayers rarely scrutinized the smelting of silver (*Memorial ajustado*: 52 verso, 53 recto).

Questioned by the inspector on the inferior alloy and weight of the coins, assayer José de Rivas found himself in a very awkward situation. He explained, backed by other witnesses, that the mint could not have produced inferior alloy because his colleagues verified the quality (*Memorial ajustado*: 53 recto, 54 verso and recto). According to this assayer, the only explanation for the massive production of inferior coins was that forgers had struck these specimens bearing his mint-mark, starting even before he had assumed the office (*Memorial ajustado*: 59).

As with the testimonies in any trial document, all of these statements have to be taken with a grain of salt. As was customary under Spain's *ancien régime*, the inspector Fernández y Veytia Linage did not specify the criteria for selecting these witnesses. Seven of the ten witnesses were employees or even relatives of the silver merchants and had aided in the striking of coins (*Memorial ajustado*: 49 recto, 50 verso). Given the close relationship between royal officials and colonial society, we may also expect a favorable depiction of the accused. The employees of the silver merchants exculpated the royal officials while cautiously portraying their employers as the lords of the mints. This proved an expedient strategy. The accused royal officials faced prison and stood to lose their posts in the mint. The silver merchants were to lose control over the mint, but did not expect further punishment. Although witnesses and suspects very likely colluded in the trial, their testimony gives us a much better understanding of the working of the mint than would a reliance exclusively on legal texts. Additionally, the inspector specifically inquired whether the merchants minted in the absence of the royal officials. Fernández y Veytia Linage must have been aware of the situation in the mint from other sources too.

The silver merchants thus controlled the mint, striking silver together with their minions while co-opting the assayers and other mint officials. These royal officials had little interest or power to enforce the mint laws. Some of them possibly aided the silver merchants, and some might not have exercised a function at all, holding their office merely as a sinecure. Having bought their positions from the crown for considerable sums, the officials received a cut from the mint's profits as a return on their investment. At about the time of the *visita*, the High Court (*audiencia*) of Mexico estimated an annual yield of over 10 percent on the purchasing price for superior offices such as assayer (Bertrand 1999: 345). In the same way, the convent of the Holy Desert held the right to appoint the senior assayer, and used the proceeds from the office to maintain itself.

This arrangement does not come as a surprise; it resembles the organization of other crown offices in New Spain at this time. For example, the royal officials in the ports of Veracruz and Acapulco wove close ties with local society by marrying into mercantile families. As a result, the officials often cooperated with contraband

merchants to circumvent the impractical royal limitations on trade (Bertrand 1999: 35–46, 407–409).

The interrogation of witnesses during the mint *visita* also provides an answer to another question of numismatists: How could the cob coinage, which was not uniform in size or weight, serve as a reliable currency? The scribe Miguel Moreno Vezares and Juan Claros, a minion of a silver merchant, affirmed that the merchants struck the denominations *al marco* (*Memorial ajustado*: 50 verso, 125 recto, 126 verso). This means that during production a set number of flans needed to be produced from one mark of silver, which in this case was eight ounces; *al pezzo* production, on the other hand, required that each flan be carefully prepared to a prescribed weight and often shape. Because *al marco* production was concerned not with the weight of individual coins, but rather the weight of a group of coins en masse, this procedure permitted sloppy production and resulted in many irregular coins. It also invited forgery. Possibly the silver merchants saw the striking *al marco* as expedient because many of these coins traveled to Spain, where they were to be recoined. The mintage of cob coinage fulfilled the requirements of the law and guaranteed that the coins had been taxed—at least theoretically—so that hostile royal officials could not simply confiscate the silver. In striking contrast to the shoddy quality of the cobs stood the so-called royal (*tipo real*), a coin of superior quality, meeting the standards of the law (Plate 33 no. 2). Numismatists generally assume that the royal served as a showpiece to the authorities.

A year after commencing the inspection, the *visitador* Fernández y Veytia Linage formally confirmed the complaints of the crown. The mint officials had systematically circumvented the laws, and the coins they produced did not meet the legal requirements. On 16 June 1730, after prison sentences had been meted out, the viceroy converted the sentences into house arrest for the treasurer, the weightmaster, a scribe, two guards, and the assayer José de Rivas Angulo (*Memorial ajustado*: 11 recto).

After this purge, the crown put the entire mint administration on a new footing. Madrid appointed the *visitador* José de Fernández y Veytia Linage as the new superintendent of the mint. Fernández y Veytia Linage thus enjoyed an unparalleled position of power, since not even the viceroy could challenge his decisions. Only the *junta* (a small council) of finances in Madrid reviewed the superintendent's mandates (Gerónimo de Uztariz to viceroy Marquis of Casafuerte, Madrid, 9 April 1731, AGN, Reales cédulas originales, vol. 50, exp. 29: 85 recto–86 recto). The crown took over all offices in the mint that it had previously farmed out, except that of weightmaster, the official charged with monitoring the proper weight of ingots, planchets, and minted coins (*fiel*).³ After 1731, the crown appointed the officials of the mint, who received a considerable raise and a steady salary instead

3. There is some confusion about the sale of this office. According to Bertrand (1999: 345, 347), since 1731, the crown appointed the *juez de balanza*, i.e., the weightmaster, but

of having to purchase their position. The assayers, for example, now earned a substantial annual income of 4,000 pesos—the same as the salary of a judge on the High Court of Mexico City, one of the best-paid positions in the colony.⁴ With the increased salary, the crown demanded higher obedience and less collusion with colonial elites.

With this reform, the silver merchants lost much of their control over officials and the mint. Although the salaried officials continued to rely on patronage to secure their positions, and surely introduced new clandestine means to augment their personal income, some of the rampant disregard for the laws vanished. The social profile of the employees also changed markedly. In the late seventeenth century, the crown sold minor offices such as that of a guard or a notary for between 18,000 and 25,000 pesos, whereas the treasurer paid usually about fifteen times as much: 256,500 pesos in 1703. Officeholders had often belonged to the upper crust of the colonial society: for example, a titled noble, the Marquis of El Villar de Aguila, held the post of *guarda mayor* (head guard of the mint). After the reform, officials of a more bourgeois background and relying on their salaries came to dominate the mint. This change also had ramifications for the church. Many pious foundations depended on the largesse of aristocratic families in New Spain. Some of the foundations lost their patrons once more of the mint profits went straight into royal coffers (Bertrand 1999: 345–349).

By 1731, the crown had ordered the introduction of machinery as another aspect of the reform (Gerónimo de Uztariz to viceroy Marquis of Casafuerte, Madrid, 9 April 1731, AGN RCO vol. 50, exp. 29: 85 recto–86 recto). The production of cobs and *recortados* (klippes, i.e., hand-struck coins with a clear stamp and cut-off edges) petered out between 1732 and 1734.⁵ From 1734 on, the mint of Mexico City issued coins at a uniformly high quality until the end of the colonial period (Plate 33 nos. 3–4). This technological change in New Spain followed the peninsular mints, where machine-made coins had already replaced cob coinage in the seventeenth century.

THE ASSAYER AND HIS MARK

As a result of the *visita* and the subsequent new footing of the mint, the crown ousted royal officials and appointed new ones. These changes also left their traces

continued selling the office of the *fiel*, whereas Menzel (2004: 6) regards *fiel* and *juez de balanza* as different terms for the same office.

4. The superintendent of the mint received 6,000 pesos annually, while the viceroy of New Spain received a salary of c. 27,573 pesos. In comparison, an alguacil executor, a police officer at the Tribunal of Accounts, earned only 220 pesos (Informe del tribunal de cuentas, Mexico City, 15 November 1780, Biblioteca Nacional de México, Fondo Reservado, Manuscritos 439: 333 recto–339 recto; José de Patiño to viceroy Marquis of Casafuerte, Madrid, 14 July 1732, AGN RCO vol 51, exp. 61: 264 recto–276 verso).

5. Compare the entries for cobs and *recortados* in Calicó et al. (1988: esp. 377, 382).

in the assayer's mark. Numismatists have compiled indices of the assayers and their respective mintmarks. In the revised Spanish edition of their *Numismatic History*, Pradeau and Beltrán Martínez (1950) recorded the assayer's marks on all known Mexican coins, indicating the period when these letters appeared on the various denominations. Both scholars supplemented this list with brief biographical sketches of mint officials. Yet Pradeau and Beltrán Martínez did not weave this information together. In most cases, the biographical sketch of an assayer does not reveal his mark, and the list of assayers' letters does not disclose the identity of the official.

Although Josep Pellicer i Bru (1997) drew most of his data for Mexico from Pradeau and Beltrán Martínez, especially in regard to duration in office, he amended their research by linking tenure, identity, and the mark of most assayers. Krause's standard catalog on Iberian and Iberoamerican coins contains additional information, although its validity cannot be verified (Krause et al. 2002). In his recent publication on colonial coinage, Menzel (2004) introduces significant new data from the Archivo General de Indias in Seville.

Altogether, numismatists have made great strides toward a complete compilation. Nevertheless, problems remain. Several marks of the epoch around the time of the visita have not been clearly identified, and there is disagreement about the tenures of several officials. None of the secondary literature adequately explains the career pattern of officials or elucidates how their promotions were tied to stamping their letters on the coins. Furthermore, the meaning of most marks consisting of double letters such as "MM" or "MF" still needs to be clarified.

The chart of assayers in the Appendix draws mainly on the published records of the mint inspection of 1729–30 (*Memorial ajustado*) and on Fabián de Fonseca and Carlos de Urrutia's eighteenth-century survey, the *Historia general de real hacienda* (1845–53). Documents from the Mexican Archivo General de la Nación and ARGENA, the electronic index of the manuscripts in this archive, were consulted for additional data.⁶ ARGENA contains brief excerpts of 370,000 documents in ninety-eight sections (*ramos*) of the AGN. As in any index, minor misunderstandings about the contents have on occasion found their way into the briefs, but since the questions asked for the purpose of this article are of a relatively simple nature, the ARGENA should be sufficient.

In several cases, I was able to establish or correct the hitherto tenuous link between an assayer and an assayer's mark. For example, Pellicer as well as Krause assign coins with the mark "L" to the assayer Martín de López, whose tenure they date from 1678 to 1703. Documentary evidence, however, vitiates this interpretation. Martín López did obtain permission to take the assayer examination in 1649. In 1651, he was ordered to pay half an annual salary in taxes (the so-called *media anata* tax) to the royal treasury to assume his position as interim assayer. Hence, the mark "L" on coins struck down to 1669 belongs to Martín de López.

6. As of September 2005 accessible at <http://www.agn.gob.mx/SCA2/index.html>.

In that year, the viceroy had López's office as assayer put up for public auction (AGN General de parte, vol. 12, exp. 444, 313 recto; ARGNA Reales cédulas originales, vol. 15, exp. 63, and vol. 18, exp. 234). Since López cannot have held the office after 1669, coins bearing the mark "L" from 1685 on must designate another person, most likely the senior assayer (*ensayador mayor*) Manuel de León. The fact that the "L" on coins broke off again after 1705, the year of León's death, clinches that identification (ARGNA, Casa de Moneda, vol. 6 exp. 89).⁷

The next mark, "J", is securely tied to José de León, probably a relative of Don Manuel. The mark "D" and the unusually diverse range of marks attested on coins in the year 1730 require explanation. The "D" assigned to assayer José de Rivas Angulo appears on coins struck between 1724 and 1730, and does not follow the usual practice of the mark being chosen from the first letter of one of the names of the assayer. Instead, the mark denotes the "D" of the convent Santo Desierto located just outside of the city (*Memorial ajustado*: 46 verso). This monastery of the Discalced Carmelites of the Holy Desert had inherited the office of senior assayer from a previous assayer, who had purchased it at the customary royal auction. Since Rivas shared his predecessor José de León's first name and apparently another assayer called Nicolás de Rojas claimed the "R", Rivas opted for the "D".⁸

The variety of marks appearing on coins of 1729 and 1730 came about as the royal inspection of the mint unfolded. In 1729, the mint began issuing coins with the mark "F" for the supernumerary assayer Francisco de la Peña Flores; in 1730, a "G" appeared for senior assayer Diego González de la Cueva. In the same year, an "M" denoted the interim assayer Manuel de León (*Memorial ajustado*: 12v, 13 verso, 16 recto). In the course of the inspection, the viceroy arrested José de Rivas Angulo and so ordered the "D" be dropped from further coinage. Documentary evidence also suggests that Nicolás Rojas disappeared from the mint. After the purge of 1730, Mexican coins bore only the mark of interim supernumerary assayer Francisco de la Peña Flores. In 1733, Manuel de León obtained the right to impress his mark. Henceforth, on many coins, his letter was conjoined with de la Peña's mark in the combination "MF". At this time, León held the rank as full assayer or *ensayador de número*, whereas de la Peña Flores remained a supernumerary official. The preeminence of León is reflected in the letter combination, in which the "M" always precedes the "F".

The assayer de la Peña Flores died in 1753 or 1754, and Manuel Azorin's "M" joined León's "M" for a brief period (ARGNA, Reales cédulas originales, vol. 234,

7. The information on the attested marks on the coins is based largely on Krause et al. (2002), Calicó et al. (1988), and Pradeau and Beltrán Martínez (1950).

8. Assayer Melchor de Cuellar purchased the office from the crown in 1610 and bequeathed it to the monastery, which he had founded; his will is dated 27 February 1628. Afterward, the prior of the Convent of the Holy Desert chose the assayer of the mint (*Memorial ajustado*: 28 recto–30 recto). The convent most likely held the office as a sinecure and farmed it out.

exp. 78: 2). In 1762, the crown ordered the issue of money displaying an “F” for the second supernumerary assayer Francisco Antonio de la Peña Flores, probably a close relative of the deceased de la Peña Flores (ARGENA, Casa de Moneda, vol. 326, exp. 3: 48–50). After León’s death, de la Peña Flores’s mark moved to the first position, so he probably had been promoted to the post of first assayer. The subsequent changes in assayers’ marks repeat this pattern: Upon the death of the senior official, the second assayer shifted his letter to the first position, and a junior official added his own initial in the second place.

Apart from the assayers who imprinted their marks, other assayers as well appear in the literature. Pradeau and Beltrán Martínez (1950: 48–49) list, for example, Diego González de la Cueva as senior assayer from 1730 to 1779, although his mark only appears in 1730. Further research in the archives will be needed to verify the functions of these assayers, especially for those whose marks do not appear on coins.

CONCLUSION

From 1685 through 1705, the assayer’s mark “L” was struck on coinage of New Spain, representing Manuel de León. This was followed by the “J” of José de León and the “D” of José de Rivas and the Convent of the Holy Desert. During the *visita* of 1729–30, the mint produced coins with several hallmarks. Following the *visita*, only the “F” of Francisco de la Peña Flores persisted after 1730. In 1733, Manuel de León’s initial “M” joined de la Peña’s mark in the combination “MF”.

The analysis of the *visita* shows that the crown, beginning in 1729, successfully carried out a reform of a branch of the royal exchequer. Before that year, the silver merchants controlled the mintage and co-opted the assayers, while the crown obtained a share of the mint profits by auctioning off the various offices of the institution. With tacit approval of the monarch, the officeholders recouped their investments by retaining a substantial part of the wealth. After the *visita*, the crown significantly raised the salaries of mint officials, boosting the crown’s income by improving adherence to the law. The crown brought to heel oligarchic interests, professionalized the bureaucracy, and raised the quality of the coin production. This step was but one among a series of attempts to tighten royal control over the colonies. This substantial change in the mint occurred long before the famous *visita* of José de Gálvez (1765–1773), which some historians have credited with a “revolution in government” (Brading 1971: 33–96). With these reforms, however, the monarchy alienated local elites. In the late eighteenth century, increasing numbers of Mexicans began pondering independence from Spain, a goal they finally achieved in 1821.

ACKNOWLEDGMENTS

I wish to thank the American Numismatic Society for accepting me as a fellow of the Graduate Seminar in the summer of 2004, enabling research on this

topic. I also would like to extend my thanks to Professor Kenneth Harl and to an anonymous reviewer for very valuable comments on earlier drafts of this article. Dr. William Bischoff graciously shared his vast knowledge of colonial coinage, and Dr. Richard Doty provided images of specimens at the Smithsonian Collection.

LIST OF COINS ILLUSTRATED

1. Hand-struck 8 reales, Philip V 1704, assayer's mark "L" (ANS 1989.69.15).
2. Hand-struck 8 escudos, so-called royal, Philip V 1729, assayer's mark "R", property of the Hispanic Society of America (ANS 1001.1.25712).
3. Machine-struck 4 reales, "dos mundos" type, Philip V 1734, assayer's mark "MF" (ANS 1947.47.284).
4. Machine-struck ½ real, Charles III 1774, assayer's mark "FM" (ANS 1911.105.1247).

APPENDIX:

CHART OF THE ASSAYERS AT THE MINT OF MEXICO CITY

The following chart registers the changes of personnel and hallmarks in mint of Mexico City from 1700 to 1735. In the "assayers" columns, the list records the career stations of an assayer and the appearance of his mark. In the "mark" column, the list shows the striking of all assayers' marks in a particular year. This column is largely based on Krause et al. (2002), Calicó et al. (1988), and Pradeau and Beltrán Martínez (1950), the latter reference abbreviated on the chart as PBM. ARGENA, the electronic index of the National General Archive in Mexico City, is abbreviated as ARG; the *ramos* or sections within this archive are abbreviated as CM for Casa de Moneda, GdP for General de Parte, and RCO for Reales Cédulas Originales; cited are the volume and *legajo*, or file number, as given in the index. The last column reflects the assayers who imprinted their hallmarks according to Menzel (2004), the most recent publication on the subject.

Year	Assayers			Mark	Notes	Menzel
1700	Manuel de León, chief assayer, mark L	José de León, interim assayer since 1697	Felipe Rivas de Angulo, lieutenant assayer	L	González (1997: 137); ARG CM 93.6.254-261	Martín López, assayer since 1677
1701	dies	assayer, chief smelter, mark J		L	ARG CM 6.89	López and José de León
1702				L		
1703				L		
1704				L		
1705				L, J		

Year	Assayers		Mark	Notes	Menzel
1706	José de León, assayer, chief smelter, mark J	Felipe Rivas de Angulo, lieutenant assayer	J	ARG CM 6.18	José de León
1707			J		
1708			J		
1709			J		
1710			J		
1711			J	PBM: José de León, chief assayer 1711–1721	
1712			J		
1713			J		
1714			J		
1715	Manuel de León, assayer		J	ARG GdP 23.211.158	
1716			J		
1717			J		
1718			J		
1719			J		
1720			J		
1721			J		
1722	Juan de Cuevas Sandoval, lieutenant assayer		J		
1723			J		
1724	Domingo García de Mendiola, assayer	José de Rivas, mark D	J, D	<i>Memorial ajustado</i> 59r, 63v	León and Domingo García M. (mark D)
1725		Nicolás de Rojas, assayer	D		
1726			D	PBM 55: Rojas' mark J	Domingo García M.
1727			D		
1728			D		
1729	appointed accountant	mark R	D, R, F	José de León present at visita	Domingo García M., Nicolás de Rojas
		Manuel de la Peña			
		lieutenant assayer			
		Francisco de la Peña Flores, supernumerary assayer, mark F			

Year	Assayers				Mark	Notes	Menzel
1730	Domingo García de Mendiola, removed after <i>visita</i> ?	Francisco de la Peña Flores, supernumerary assayer, mark F	Diego González de la Cueva, chief assayer, mark G	José de Rivas, lieutenant assayer	D, R, F, G	ARG CM 493.729	Rojas, González de la Cueva, Felipe Rivas Angulo (mark F)
1731					F		Felipe Rivas A.
1732					F		
1733	Manuel de León, assayer				MF, F	ARG CM 493.729, Fonseca 1.144	Felipe Rivas A., León, and Peña Flores (mark MF)
1734					MF, F		
1735					MF		

REFERENCES

- AGI: Archivo General de Indias, Seville, Spain. Audiencia de México.
- AGN RCO: Archivo General de la Nación, Mexico City, ramo civil. Reales cédulas originales.
- ARGENA: Electronic index of the Mexican General National Archive (AGN), accessible at <http://www.agn.gob.mx/SCA2/index.html>.
- Bertrand, Michel. 1999. *Grandeur et misères de l'office. Les officiers de finances de Nouvelle-Espagne, XVIIe-XVIIIe siècles*. Paris: Publications de la Sorbonne.
- Brading, David. 1971. *Miners and merchants in Bourbon Mexico, 1763-1810*. Cambridge: Cambridge University Press.
- Bruce, Colin R. 1981. *Standard catalog of Mexican coins, paper money, stocks, bonds, and medals*. Iola, Wisc.: Krause Publications.
- Burzio, Humberto F. 1952. El oficio de ensayador en América, en el período hispánico. *Numisma* 2: 65-77.
- . 1958. *Diccionario de la moneda hispanoamericana*. Santiago de Chile: Fondo Histórico y Bibliográfico José Toribio Medina.
- Calicó, Ferrán, Xavier Calicó, and Joaquín Trigo. 1988. *Monedas españolas desde Fernando e Isabel a Juan Carlos. Años 1474 a 1988*. 7th ed. Barcelona: Gabinete Numismático Calicó.
- Craig, Alan K. 2000. *Spanish colonial gold coins in the Florida collection*. With an appendix by Frances Keith. Gainesville: University Press of Florida.
- Dasí, Tomás. 1950-51. *Estudio de los reales de a ocho también llamados pesos, dólares, piastras, patacones o duros españoles*. 5 vols. Valencia: Sucesor de Vives Mora.

- Fonseca, Fabián de and Carlos de Urrutia. 1845–53. *Historia general de real hacienda, escrita por D. Fabian de Fonseca y D. Carlos de Urrutia, por orden del virey, conde de Revillagigedo. Obra hasta ahora inedita y que se imprime con permiso del supremo gobierno*. 5 vols. Mexico City: V. G. Torres.
- González Gutiérrez, Pilar. 1997. *Creación de casas de moneda en Nueva España*. Alcalá de Henares: Universidad de Alcalá.
- Herrera, Inés and Rina Ortiz. 1999. *Catálogo del Archivo Histórico de la Casa de Moneda de México... realizado por un grupo de investigadores del INAH*. Madrid: Fundación Histórica Tavera, DIGIBIS.
- Krause, Chester L., Clifford Mishler, and Colin R. Bruce, eds. 2002. *Spain, Portugal, and the New World. Standard catalog of world coins*. Iola, Wisc.: Krause Publications.
- Lasser, Joseph R. and Jorge Emilio Restrepo. 2000. *The cob coinage of Colombia, 1622–1756*. New York City: Pertinax.
- Lynch, John. 1969. *Spain under the Habsburgs*. Vol. 2, *Spain and America 1598–1700*. Oxford: Oxford University Press, 1969.
- Memorial ajustado*: Real Junta de Comercio y Moneda. 1734. *Memorial ajustado, hecho en virtud de decreto de los señores de la Real junta de comercio, y moneda... contra el capitan don Joseph Diego de Medina y Sarabia... Don Manuel de Pereda Palacio... y don Francisco de Fagoaga...* Mexico City, 1734. New York Public Library, Rare Books Division.
- Menzel, Sewell. 2004. *Cobs, pieces of eight, and treasure coins: the early Spanish-American mints and their coinages, 1536–1773*. New York: American Numismatic Society.
- Pellicer i Bru, Josep. 1997. *Glosario de maestros de ceca y ensayadores (siglos xiii–xx)*. 2nd ed. Madrid: Museo Casa de la Moneda.
- Phelan, John Leddy. 1967. *The kingdom of Quito in the seventeenth century. Bureaucratic politics in the Spanish empire*. Madison: University of Wisconsin Press.
- Pietschmann, Horst. 1972. *Die Einführung des Intendantensystems in Neu-Spanien im Rahmen der allgemeinen Verwaltungsreform der spanischen Monarchie im 18. Jahrhundert*. Cologne: Böhlau.
- Pradeau, Alberto Francisco. 1938. *Numismatic history of Mexico from the pre-Columbian epoch to 1823*. Los Angeles: Whittier.
- Pradeau, Alberto Francisco and Román Beltrán Martínez. 1950. *Historia numismática de México desde la época precortesiana hasta 1823*. Mexico City: Banco de México.
- Rosenmüller, Christoph. 2003. *Clients, conflicts, and the court. The viceroyalty of the X Duke of Albuquerque in New Spain, 1702–1710*. Ph.D. dissertation, Tulane University.
- Sánchez Bella, Ismael, ed. 1992. *Recopilación de las Indias por Antonio León Pinelo*. Mexico City: Instituto de Investigaciones Jurídicas, UNAM.

Soria Murillo, Victor. 1994. *La Casa de Moneda de México bajo la administración borbónica, 1733–1821*. Mexico City: INAH.

Tutino, John Mark. 1976. *Creole Mexico: Spanish elites, haciendas, and Indian towns, 1750–1810*. Ph.D. dissertation, University of Texas at Austin.

The ANS Lincoln Memorial Medal: a Reexamination

PLATES 34–37

SCOTT H. MILLER*

The Lincoln Memorial medal was the first medal published by the ANS, issued in 1866. It is widely claimed by writers and cataloguers of Lincoln and ANS medals that only sixteen examples were struck before the dies broke. In fact, careful examination of the documentation reveals that over 100 examples were struck from the original dies, that a second set of dies was prepared but not used until 1915, and that a third (cancelled) obverse die also exists.

They said in the family that it was absurd—that I was too young—that I could not possibly remember the night Lincoln was shot, but I could, and I did (French 1928).¹

Ever since its formation in 1858 as the American Numismatic and Archaeological Society, the ANS has been a leader in the publication of commemorative medals. Unfortunately, no definitive reference yet exists describing these issues. While a number of books and catalogues include information about one or more of these medals, quite a bit of this information is inaccurate, and perhaps no issue has been the subject of more inaccurate information than the first medal published by the Society—the Lincoln Memorial medal.

* wheatabix@comcast.net

1. Although now often relegated to the dusty chapter of a long-forgotten era, the assassination of Abraham Lincoln was, in its time, so terrible and shocking an event that many of those old enough to remember carried their memories of the tragic event for the rest of their lives.

The medal was issued in 1866 and has a fairly simple design (Plate 34 no. 1). On the obverse is a bust of Lincoln, right, and the inscription SALVATOR PATRIAE., EMIL SIGEL FECIT below, while the reverse contains a wreath and the inscription IN MEMORY OF THE LIFE ACTS AND DEATH OF ABRAHAM LINCOLN BORN FEBRUARY 12. 1809. DIED APRIL 15. 1865. On a ribbon within the bottom of the wreath are the words PUB. BY THE AMERICAN NUMISMATIC AND ARCHAEOLOGICAL SOCIETY NEW YORK 1866

For more than a hundred years virtually every writer and cataloguer of Lincoln and ANS medals has repeated the story that only sixteen medals had been struck when the dies broke, rendering further strikings impossible. Some, like Andrew Zabriskie (1901), wrote that the dies were so badly broken after only sixteen bronze examples were struck that it was necessary to create a new set of dies, differing from the first, leading some to believe that two varieties exist. In his standard work on Lincoln medals, *Lincoln in Numismatics*, Robert P. King includes both bronze and white metal examples, but notes "sixteen were struck in white metal, when the die broke" (King 1966: 34, no. 244). Closest to the truth, but often overlooked as an authority, was Bauman Belden, whose *Medals and Publications of the American Numismatic Society* gave an estimate of slightly over one hundred medals in bronze and white metal (Belden 1915). Although the records are fairly clear, it appears that few researchers have bothered to read through all of them. Fewer still, it seems, have examined the physical evidence. It is hoped that this article will help set the record straight.

The tragic events of 14 April 1865 have been retold countless times, so that virtually every American is aware of how within days of Lee's surrender at Appomattox, John Wilkes Booth shot Abraham Lincoln at Ford's Theater while the President watched a performance of "Our American Cousin". The President was taken to a nearby house, where he died the following morning. Along with the rest of the country, members of the American Numismatic and Archaeological Society reacted strongly and swiftly to the assassination.

A special meeting of the Society was called for 27 April 1865, two days after Lincoln's body lay in state at City Hall and passed through New York towards Albany. Three members, George H. Perine, Frank Leath, and John Hanna, were appointed to draft a resolution for the Society, which read: "RESOLVED, That since it is the duty of this Society to perpetuate the memorials of historic greatness, we will cause to be struck in bronze a medal, designed to commemorate the life and perpetuate the name of Abraham Lincoln; and that a Committee be appointed to carry this resolution into effect" (Weeks 1892: 16; Adelson 1958: 44). At the next meeting on 11 May, a committee headed by Hanna was appointed to carry out the work necessary for production of the medal (Adelson 1958: 44).

Requests for subscribers were quickly made and by the end of May the list had grown to 120. Money was to be a constant worry for the medals committee and the

Society, but at this time everything was proceeding at a rapid and entirely satisfactory pace. After a competition in which a number of die-sinkers were invited to submit designs for the medal, the contract was awarded to an otherwise obscure engraver named Emil Sigel of New York. A number of newspapers around the country provided coverage, adding to the public interest. By August, William Barber expressed interest in making the medal, but as the contract had already been awarded and work commenced, he was too late (Adelson 1958: 44-47).

By 17 January 1866 work had advanced sufficiently that a solder impression had been made and exhibited at the Society (Weeks 1892: 18). The first bronze impressions were probably made in January as well. On 11 February, the Society's Vice President, Dr. Perine, presented specimens of the medal to President Andrew Johnson and the orator George Bancroft. These specimens, from unfinished dies, were presented the day before the actual 12 February ceremony in honor of the anniversary of Lincoln's birth, as the decision to make the presentation had been made too late to include in the program (Adelson 1958: 47).

The first agent appointed for sale of the medals appears to have been Messrs. Stevens Bros., London. In a letter dated 26 January 1866, that firm was informed that should they accept the appointment, the issue price of the medal would be \$5.00, with the agent getting a commission of 20%. Stevens Bros. did accept and on 3 March wrote that they had only been able to obtain half a dozen subscriptions, which they blamed on the need to show a woodcut of the proposed medal, rather than the actual object. On 3 April F. Augustus Wood wrote back that a specimen had been forwarded to them three weeks earlier. Wood also wrote that there were delays in striking the medal because "the presses, which were engaged on the Vanderbilt medal ordered by Congress, have broken down, adding another to the long series of vexatious delays which have constantly beset the path of the committee" (letter from Wood to Stevens Bros., quoted by Weeks 1892: 19).²

On 30 March the Committee was able to report that "at length, everything being completed and in readiness, the difficulties of obtaining a sufficiently powerful press having been surmounted, the dies were put in press and the process of striking commenced" (*AJN* 1866: 5). Two weeks later, on 12 April 1866, Mr. Hanna read the following note from Emil Sigel: "Sixteen bronze medals and a few in white metal have been struck, when by some accident not yet fully understood, the dies were broken so badly that as to necessitate the abandonment of all idea of striking from them medals in hard metal, although it was believed that they would strike impressions in soft metal without the injury being apparent" (*AJN* 1866: 5).

It is this letter, apparently, that has led to much of the confusion surrounding the mintage figures. Fortunately, additional records and the dies themselves are available to provide more accurate information.

2. According to R. W. Julian, the gold Vanderbilt medal was struck at an unnamed private mint in New York (Julian 1977: 225).

As noted, in April 1866 Sigel notified the Society that the dies had broken, and proposed the striking of additional examples in tin. This proposal was accepted provided that a minimum number of medals could be guaranteed. That guarantee was apparently not forthcoming as on 24 May 1866 the Medal Committee reported that "Mr. Sigel would at once proceed with the new dies of the medal" (Weeks 1892: 20).

In addition to the difficulties in striking the medals and the breaking of the dies, the Society was plagued by financial problems over the medal and the need to pay for a second set of dies. At a meeting on 20 June 1866 a resolution, based on the Finance Committee's report of 14 June, was adopted, which read: "That all members of the Society, who have not subscribed for two medals, or the sum of ten dollars, be requested to do so. That a loan of ten dollars be requested from each member. That, should the amount to be obtained fall short, a committee be appointed to solicit such sums as will make up the deficiency" (Weeks 1892: 20).

By 11 October, the Committee had arranged with Mr. Sigel to have a number of pieces struck in block tin (Weeks 1892: 20). Two months later, on 13 December 1866, Daniel Parish, Jr., moved that the Medal Committee "open a correspondence with Mr. Sigel, and obtain from him a statement of account, and full particulars of all matters connected with the medal" (Weeks 1892: 21). Shortly thereafter, on 28 February 1867, both Anthon and Parish were added to the Lincoln Medal Committee (Weeks 1892: 21).

On 14 March 1867 the Committee proposed that fifty tin medals be struck, and sold for \$3.00 each among the members. In place of that proposal, it was decided that "a subscription, of three hundred dollars, to be taken from the members, as an advance to Mr. Sigel, to enable him to prepare new dies and complete the medal according to the original intention" (Weeks 1892: 21).

The June, July, and August 1867 issues of the *American Journal of Numismatics* carried advertisements for the Lincoln medal. Subscribers who had paid \$5.00 for bronze medals were offered the option of taking a tin medal from the original dies in an elegant case, two tin medals without the case, or a bronze medal from the new dies, available about 1 August. The tin medals were to be ready for distribution by 1 July (Weeks 1892: 22). The medals thus appear to have been priced at \$5.00 for a bronze specimen, \$2.50 for a tin example, and \$2.50 for an elegant case.³ Unfortunately, as this writer has so far been unsuccessful in locating one of the "elegant cases", a description cannot be given. However, given the cost, one would hope it was impressive.

By October 1867 the new dies were completed. The Committee reported that the medals would soon be issued (Weeks 1892: 22). It appears that soon afterwards the Committee contacted the Philadelphia Mint regarding the possible use of its facility for striking medals from the new dies, as on 14 January 1868

3. These prices are approximate, as they refer only to those who originally subscribed \$5.00. It is likely that any subsequent sales were not priced much differently.

William E. Dubois, Superintendent of the US Mint at Philadelphia, wrote to the Society:

Your medal has just come. On inquiry I am told that on account of the excessive relief and large diameter and flat table, each medal will require 25 to 30 blows of the medal press, with an annealing each time; it will take four men a whole day to strike four medals; and that the charge, including the copper, would in any ordinary case be not less than five dollars; but in this case, it will be put at \$4.25, as the lowest we dare to take, acting as we do in a public capacity. I am extremely sorry to have to say so.

'We consider the dies a great success' you say; I must frankly reply, we consider them a great blunder. What induces the man to make such a huge relief, and throw the features, the outlines of the face particularly, almost out of sight? But I am afraid to say another word, lest you should think me prejudiced, or unkind. As a *casting* it might do; as a medal *to be struck*, it is in violation of all rule. I must add, that the Mint will not take any responsibility, as to the dies standing good, through such extra hard work. What a pity you did not wait for our medal machine. All that the artist now has to do, is to make his model in wax!... I forgot to say, that the Mint will not be in an undo hurry about payment, where the parties are so respectable and responsible; and that copies can be kept here on sale, at your prices, and for your account (letter from William E. Dubois to Charles Anthon, 14 January 1868, ANS archives, box 1.1.4; printed with minor changes in Weeks 1892: 22).

The points raised by Dubois are valid; the relief on the medal is extraordinarily high, although it does have a certain rough charm, as undoubtedly did the subject. From a technical stance the medal was, at best, ill conceived. In the end, the Society did not accept the Mint's offer, signing instead an agreement with Sigel on 17 February 1868 (Weeks 1892: 23).

The agreement noted that because the dies cracked, the Society could have the original dies for half the original price. It further noted that Sigel had made new dies for \$600 but no new medals from those dies.⁴ The agreement concluded that Sigel would pay the Society \$720, less a sum for each tin medal delivered, and would strike as many medals as desired by the Society. It further established that the Society would have a lien against both dies until the \$720 was paid and that Sigel was prohibited from striking any medals from these dies for any except the Society (Weeks 1892: 23).

On 14 May 1868 the Committee reported that seventy impressions of the medal were ready. On 28 May the Committee delivered thirty-six medals, and on

4. To appreciate the enormity of this amount, consider that the Mint claimed four men could strike four medals in one day, yet would charge only \$4.25 per medal. If each workman earned even slightly less than that amount each day, the cost of the two dies would equal the earnings of one workman over a period of about 150 work days.

25 June it reported distribution of fifty-four medals to subscribers (Weeks 1892: 24).

On 1 December 1874 the Executive Committee sought to wrap up the Lincoln medal business and reported total receipts of \$102.50 less \$40.00 collected for the single silver specimen that was never struck. They also reported having four tin impressions from the original dies and nine medal cases. The dies were then in the hands of Mr. Sigel, who had, however, failed to pay the \$720 (less cost of the tin medals delivered) specified in the contract of 17 February 1868 (Weeks 1892: 24).

The final entry in Weeks is dated 29 January 1875, when the Executive Committee was authorized to dispose of all dies, rights, and titles to the medal. Nothing more was noted, except that for some reason unknown to Weeks at the time these notes were written in 1892, both sets of dies were in the Society's cabinet (Weeks 1892: 24).

Based upon this information, the original report of two bronze specimens from unfinished dies, plus sixteen bronze and a few tin specimens from the finished dies, which would put the original number at about twenty-five, cannot be correct. According to Weeks, "the number of impressions struck from the new dies is uncertain. None were struck in silver; about sixty are supposed to have been issued in bronze, and perhaps half that number in tin" (Weeks 1892: 8). Belden, possibly following the information provided by Weeks, estimated the total mintage as "probably slightly over one hundred in all" and noted that no original impressions were known from the second set of dies, though one obverse and one reverse impression in lead were made for the Society in 1915 (Belden 1915: 19). Taking all this into account, as well as the possibility that not every medal was included in the few figures reported, it would be safe to estimate the total number of medals to be between 100 and 125, with the bronze being more common than tin, and all struck from the original dies. The financial statements concerning the medal may be charitably regarded as incomplete.

The question of the need for two sets of dies has never been satisfactorily explained. Examination of the dies at the ANS fail to reveal any cracking. Three pieces, however, did break off from the shoulder of the obverse die (Plate 35 no. 2). One could easily understand Sigel's reluctance to continue striking bronze examples, fearing the die would chip further and become totally unusable. However, since the die does appear relatively intact without any serious damage, one must question whether a second die (or set of dies, as the first reverse die shows no damage) was actually needed.

In fact, the original dies were ultimately used for striking additional medals. In the August 1868 *American Journal of Numismatics*, a brief article stated that "the friends of our Society will observe with pleasure, in the last Report of its Proceedings, that very great progress has been made, through the energy of Mr. Parish, in

the delivery of impressions of the Lincoln Medal to subscribers. Nearly all those who paid in advance have received their Medals. They are from the *old* Dies, which were found to be perfectly able, with judicious handling, to bear the requisite pressure" (AJN 1868: 30). The article continues by announcing the availability of additional medals from the old dies, as well as the presumption that collectors will want impressions from the new dies as well. The differences between the two sets of dies are explained, as is the warning to other societies not to attempt the publication of medals, as it "annoyed and embarrassed us beyond measure and for a long time... [and] proved too much for our resources..." (AJN 1868: 30).

Included in Benjamin Betts' Treasurer's report submitted at the Society's annual meeting on 15 March 1881 was notice that "[e]arly in the present year an opportunity was afforded to purchase from Mr. Sigel his interest in the Society's dies of the Lincoln Memorial Medal; the price asked was deemed reasonable, and I had on a former occasion been authorized to purchase them if possible; and as it was necessary to act immediately, I at once availed myself of the opportunity; they are now present and in the possession of the Society, and I trust my action in the matter may meet with your approval" (Proceedings 1881: 8). Mr. Betts then stated that if the Society did not want the dies, he would take them. Upon a motion by Prof. Wolff, the Treasurer's action in purchasing the dies was unanimously approved (Proceedings 1881: 8).

In 1885, the matter of the Lincoln dies was again raised when Benjamin Betts submitted his Treasurer's Report, indicating "... I would here beg to again call the attention of the Society to the Lincoln medal dies as another possible source of income; among these is a new reverse die which has never been hardened, and from which no impressions have yet been taken. I would suggest the propriety of striking a few in some very soft material, if it can be done without injury to the die, after which it might be hardened, and if the process should prove successful, they could then be struck in white metal for such as might desire them; as this second die differs in some particulars from the original, it seems to me there might be some demand for impressions" (Proceedings 1885: 10-11).

Despite the suggestion by Benjamin Betts, it appears that no medals were actually struck from the new dies until 1915, when one double-sided and two uniface impressions were made (Plate 36 no. 3). Examination of the Society's accession records reveals the following entry on 28 April 1915: "3 medals: Struck from the old dies of the Societies Lincoln medal by Sigel. No medals were ever struck from these dies. The obv. shows two button holes on the Lapel and the rev. omits "acts" and is dated 1867 instead of 1866. 1 complete medal 1 obv. and 1 rev. impression struck in Pb" (ANS accession book, entry 1915.82).

On occasion, reduced-size specimens of the Lincoln medal are encountered. These reductions were produced by the London firm of J. S. and A. B. Wyon, and were struck in silver, bronze, and white metal in sizes of 35, 16, and 7 millimeters.

Although produced with the acquiescence of the Society, they were not produced for the Society.

In 1866 the Wyons, having acquired a newly invented reducing machine, issued a circular announcing the benefits to be had from its use (Adelson 1958: 50). On 5 September 1866, B. F. Stevens of Stevens Brothers sent a letter to the Society in which he enclosed two medals produced by the Wyon firm, along with a copy of the circular. In his letter, Stevens wrote "If the Society desires an example of the work for comparison, and will send me a medal to be used as a pattern, I shall have much pleasure in asking Messrs. Wyon to comply with the request" (quoted in Adelson 1958: 50). Although the Society only authorized the striking of six copies of the Lincoln medal, Stevens Bros. apparently acted on their own, so that on 26 October, J. S. and A. B. Wyon wrote to Augustus Wood that "Mr. B. F. Stevens having kindly allowed us to make reductions from your Society's Lincoln medal, by means of our valuable machine, for the sake of illustrating its capabilities, we have the pleasure of requesting you to present to the Society, on our behalf a set of the medals struck from these dies so engraved. We do not intend to do anything further with these reductions than (with Mr. Steven's consent) to show them as specimens of the work of our machine. We will on no account part with any, except in such manner and under such restrictions as your Society may wish; and, should your Society wish to purchase the dies, or to be supplied with medals struck from them, we shall have much pleasure in receiving instructions on the subject" (letter from Wyon firm to Wood, quoted in Adelson 1958: 50-51).

Although the membership of the Society was initially unhappy with this course of events and authorized an inquiry with both Sigel and Stevens Brothers regarding this matter, the issue was soon settled and the Society authorized John R. F. McCoy to purchase twenty-five sets of the reduced-size medals from Wyon for its members (Adelson 1958: 51). A check of the Society's records indicates the acquisition, possibly on 12 December 1866, of two sets of Wyon facsimiles at a cost of \$12.00 (ANS accession book, entry 1866.022).

As in any good mystery, one additional point needs clearing up. Within the Society's cabinet are not only the first and second sets of dies, but a third obverse die (Plate 37 no. 4). This die, similar to the first, no-buttonhole variety, was cancelled by effacing all lettering, leaving only the bust of Lincoln intact. As yet, no information or explanation for this die has been found.

ACKNOWLEDGMENTS

The author would like to thank David Alexander, Frank Campbell, Joseph Ciccone, Jay Galst, Robert Hoge, H. Joseph Levine, Roslyn Miller, Donald Scarinci, and Anthony Terranova for their assistance and suggestions in the preparation of this article.

REFERENCES

- Adelson, Howard. 1958. *The American Numismatic Society, 1858–1958*. New York: American Numismatic Society.
- AJN. 1866. Transactions of societies: the Lincoln medal. *American Journal of Numismatics* 1: 5.
- . 1867. Transactions of societies: bulletin of the American Numismatic & Archaeological Society. *American Journal of Numismatics* 1: 90.
- . 1868. The Lincoln medal. *American Journal of Numismatics* 3: 30.
- Belden, Bauman. 1915. *Medals and publications of the American Numismatic Society, with an historical sketch*. New York: American Numismatic Society.
- French, Mrs. Daniel Chester. 1928. *Memories of a sculptor's wife*. Boston: Houghton Mifflin.
- Julian, R. W. 1977. *Medals of the United States Mint: the first century, 1792–1892*. El Cajon, Calif.: Token and Medal Society.
- King, Robert P. 1966. *Lincoln in numismatics*. n.p.: Token and Medal Society [reprint].
- Proceedings*. 1881. *Proceedings of the American Numismatic and Archaeological Society of New York at the annual meeting, March 15, 1881*. New York: American Numismatic and Archaeological Society.
- . 1885. *Proceedings of the American Numismatic and Archaeological Society of New York at the twenty-seventh annual meeting, Tuesday, March 17th, 1885*. New York: American Numismatic and Archaeological Society.
- Weeks, William R. 1892. History of the American Numismatic and Archaeological Society. In: *The American Numismatic and Archaeological Society of New York, Proceedings and papers, thirtieth to thirty-fourth annual meeting, 1888–92, and history of the society*. New York: American Numismatic and Archaeological Society.
- Zabriskie, Andrew C. 1901. The medallic history of Abraham Lincoln. In: *Proceedings of the American Numismatic and Archaeological Society of New York City, at the forty-third annual meeting, Monday, March 18th, 1901... also papers read before the Society... 1900–1901*, pp. 33–39. New York: American Numismatic and Archaeological Society.

Elemental Compositions of Some of the Annamese Coins of Emperor Thanh Thai via Energy-Dispersive X-ray Fluorescence

PIERRE ATALLAH, MICHAEL KUNTZ, RENEE KUZAVA,
JENNIFER FERGUSON, VINCENT IDUMA, AND MARK BENVENUTO*

Three hundred seventy-three Annamese coins of emperor Thanh Thai were analyzed via energy-dispersive x-ray fluorescence spectrometry for fourteen elements. The coins were cast in the traditional manner, and all appear to be round, brass coins with the square, central hole. The composition of the samples varied widely in lead percentages. While it was not surprising to find tin as well as zinc in the coins, it was unexpected to encounter statistically significant amounts of both silver and gold. This finding may indicate a decline in the refining capabilities of the foundrymen and mint masters, or of the control over raw materials used for the coins during this time, when compared to cast coins of other times and countries. Additionally, the large number of minor elements present in this series implies that the traditional method of coin manufacture was not apparently influenced by the French colonization of the area.

Cast coins have an ancient history in countries such as China, Japan, Korea, and Vietnam, but most serious study of them seems to have focused on those produced in China (Schj  th 1929; Lockhart 1975; Hartill 1991).¹ Metallurgical studies of coins of the French protectorate of Annam appear to be missing from the litera-

* Mark Benvenuto, University of Detroit Mercy, Department of Chemistry & Biochemistry, 4001 W. McNichols Rd., Detroit, MI 48219-0900, USA.

1. Schj  th (1929) does examine coins of countries other than China, but discusses those of China in the greatest detail; while inclusive of a large range of copper coinage, Lockhart (1975) is exclusive to China.

ture, with a preliminary study on a related set of Thanh Thai brass pieces from our group being one of the few to have been undertaken (Gaines et al. 2002).²

Although the emperor Thanh Thai reigned from 1889 to 1907—a relatively modern time during which French colonization of Southeast Asia was undertaken—the coins in this study appear to have been cast in the traditional manner, which traces back for millennia, at least in China (Schjoth 1929; Lockhart 1975).

The coins used in this study (approximately 350) have, for the most part, been purchased through a single dealer who works and resides on the US west coast. The remainder have been purchased in smaller lots at conventions sponsored by the American Numismatic Association. In utilizing a sample assembled from multiple purchases, it is hoped that a more representative composition for a large group will be found, with less bias in terms of composition, than if all were recovered from a single hoard.

The aim of the study is to determine the metallurgical composition of the samples, to determine if adulteration with lead was commonplace, and to determine if significant amounts of precious metals are evident within the coins. A general metallurgical study of a group of coins such as this can reveal trends that in turn give clues and indicators as to the method and quality of manufacture. Widespread use of lead can be a rough indicator of a loss of quality control within the foundries. Previous sources have cited edicts indicating that the addition of lead to coins was to be strictly regulated (Hartill 1991).³ The presence of precious metals can indicate poor or deficient refining capabilities, or it can indicate minimal control as to starting raw materials for coins. One of our past studies, in which a significant amount of gold was expected in certain marked samples, turned up none. This in turn indicates a higher than expected level of control of the metal used for coinage (Gaines et al. 2001).

The technique used to analyze this new sample set is energy-dispersive x-ray fluorescence spectrometry (EDXRF). This consists of bombarding each coin with x-rays of various energies, which excites atoms at or near the sample surface. The technique leaves no visible markings on the coin and does not change or alter it in any way. As well, the EDXRF instrument used is well suited to the analysis of this large a set of objects, because analysis time is approximately three minutes per sample.

2. Our first study of these coins gave some indication of the wide variations in metal content, and forced the realization of how little the coins of Annam had been examined.

3. The use of lead, and the imperial restriction and regulation thereof, is discussed as having been a continuing problem in China roughly a century prior to the manufacture of these coins. Since a dearth of information on Annamese coinage of the period exists, it is not unwise to assume a certain degree of overlap in such problems, since the history of the two peoples is interwoven.

These coins are considered to be brass, meaning an alloy of copper and zinc, but this examination revealed the presence of a number of other elements as well. Brass and other copper-based objects from various cultures have been studied previously (Gaines et al. 2002; Beck 1974; Carter 1978; Lambert 1984; Allen 1989; Orna 1996; Carter 1997; Mabuchi et al. 1979; Lutz and Pernicka 1996; Gaines et al. 2001; Kuntz et al. 2002), and certain impurities have become expected or routine. The findings presented here however appear to have notable differences from those of previous studies.

PROCEDURE

Energy dispersive x-ray fluorescence spectrometry (EDXRF) is a non-destructive surface analysis technique that “sees” up to 100 μm into a metal object. The x-rays given off by an alloy are specific to the elements within the alloy. Using known standards for comparison, good correspondence can be had for all elements in a multi-element alloy, down to at least 50 parts per million (ppm). The lower threshold differs slightly from one element to another, but is always in the 10–50 ppm range.

No surface alteration was performed on the coins in this series, unless there was a visible patina or encrustation. In such cases, coins were washed with warm water and lightly scrubbed with a soft toothbrush, then immediately dried. Other than that, surface preparation meant a simple wiping with a dry Kimwipe tissue, and visually examining each coin to ensure that a clean, non-patinated surface was exposed to the x-ray beam. Each coin was examined for copper (Cu), zinc (Zn), tin (Sn), lead (Pb), iron (Fe), nickel (Ni), cobalt (Co), arsenic (As), bismuth (Bi), antimony (Sb), gold (Au), platinum (Pt), palladium (Pd), and silver (Ag) on a Kevex Spectrace Quanx energy-dispersive x-ray fluorescence spectrometer. Standard sample excitation conditions were 20-kV, 0.10-mA, 100-second count, $K_{\alpha\beta}$ for Fe, Co, Ni, Cu, Zn, As, Pt, Au, Bi, and Pb, followed by 45-kV, 0.72-mA, 60-second count, L lines, for Pd, Ag, Sn, and Sb, using a rhodium target x-ray tube. Fundamental-parameters software and pure elements standards were used for determining major and minor elemental concentrations. Brass standards of known concentrations were run at the beginning of each data-gathering session, as a minimum. As well, each coin was run twice, as a minimum, to ensure reproducibility of results.

The coins were examined first by comparing the percentages of major elemental components (as in Table 1), then by graphing specific elements against a major elemental composition or components, such as copper (as in Figures 1 and 2).

CHEMICAL COMPOSITIONS

The average elemental compositions of these coins are shown in Table 1 in the Appendix. Scanning the table, it can be seen that copper is indeed the predominant

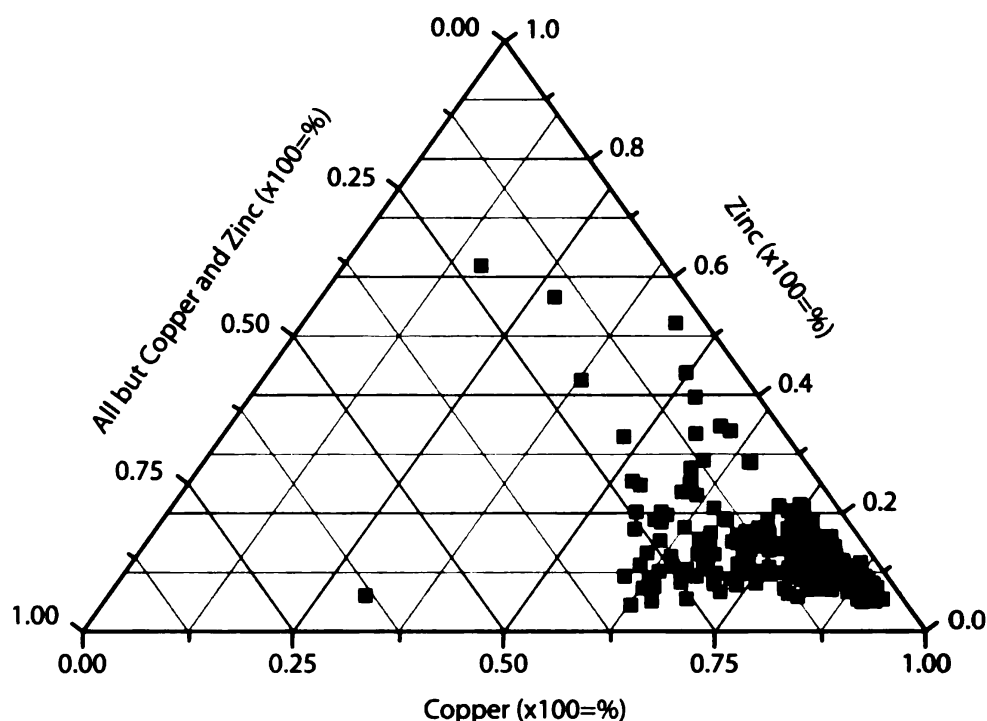


FIGURE 1. Copper and zinc vs. all other elements.

element in this series, although several coins do not have appreciably more than 50% copper. Those coins with lower amounts of copper were reexamined to ensure that no experimental error had occurred in their analyses. In all such cases, the results of the coins were reproducible.

Zinc percentages in Table 1 are also worthy of note, because zinc would be the only other component in a clean, brass object. It is interesting to see that copper and zinc percentages when totaled are less than 100%, indicating that other elements must form a significant portion of the alloys from which the coins are composed.

Tin, a third component that is often found in brass objects (Gaines et al. 2002; Gaines et al. 2001), never rises above 20% in this series of coins, although a significant number of the coins do contain over 5% of the element. Overall, there appears routinely to be less tin than zinc in the samples.

When copper is graphed against zinc and all the remaining elements combined, as in the ternary graph in Figure 1, an interesting pattern emerges. The elemental alloy composition for modern brass is generally two parts copper (or 67% copper) to one part zinc (or 33% zinc). This position on Figure 1, which would show as a point or points on the base axis, is empty. Most of the data points

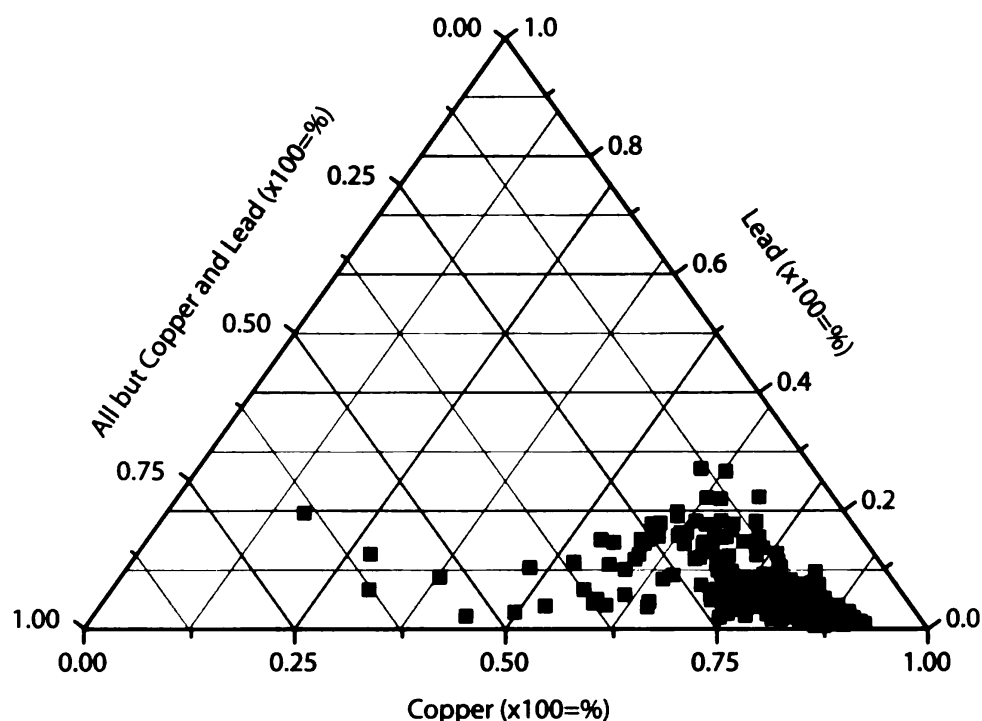


FIGURE 2. Copper and lead vs. all other elements.

indicate more copper, almost all of them show less zinc, and all show the presence of other elements.

Lead concentrations are routinely worthy of study for two reasons. First, the addition of a small amount of lead to an alloy often lowers the melting temperature of the alloy, making the batch easier to work and pour. Mint and foundry workers apparently knew this, and in China, for instance, a limit of 6.5% lead was allowed at certain times in the past (Hartill 1991). Second, because lead is often an inexpensive metal, addition of it in a small percentage to a batch of metal to be used for coinage ultimately increases the number of coins produced. This becomes important when workers or mint masters are paid by the amount of coin they produce. Such had been the case historically in China, and while China did not control Vietnam during the time these coins were produced, such control was not relegated to a distant past (Hartill 1991). It is evident from Table 1 that lead could be considered the third component in many of the samples in this study. Approximately half the samples contain nearly 10% lead.

Arsenic and antimony are also seen in a large number of the samples, as listed in Table 1. These elements do appear as minor impurities in lead ores in different parts of the world, yet are not routinely impurities in copper ores (Greenwood

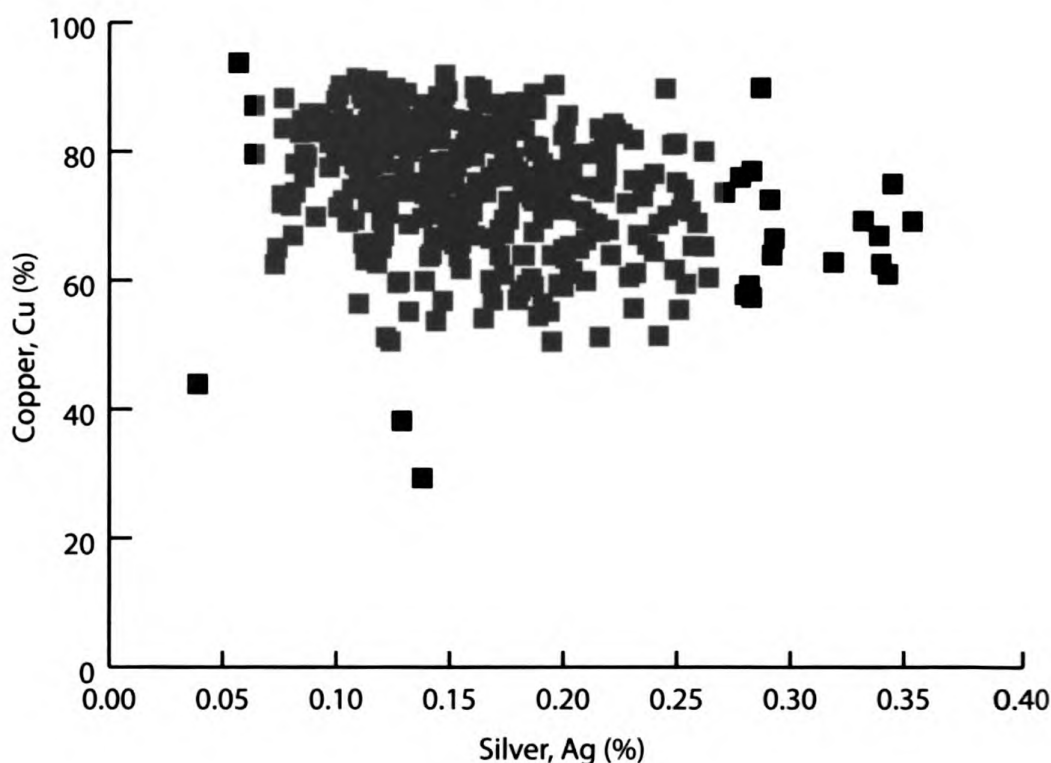


FIGURE 3. Copper vs. silver percentages.

and Earnshaw 1984). In the coins of this study however, they never rise above a few percent of the alloy, and often are as low as the detection limit of the instrument. Unfortunately, these two elements occur as traces in samples in a number of metallurgical studies of older, copper-based objects from various geographically and chronologically separated areas (Gaines et al. 2002; Gaines et al. 2001; Kuntz et al. 2002), which makes it difficult to draw conclusions about foundry sites and mining sites from them.

Findings that were surprising are shown in Figures 3 and 4, graphed in a somewhat more common fashion. Copper percentages are graphed against silver in Figure 3, while copper against gold percentages are shown in Figure 4. Both show relatively small percentages of the respective precious metal; at least there are no cases where silver or gold rises to even 1% of the total alloy. However, the presence of each metal in almost all of the coins is certain. Even taking into account that the instrument was not specifically calibrated to detect traces of silver or gold with its highest possible precision (for instance, discounting all readings under 0.15% silver—a liberal cut off point), there still remain a large percentage of the samples that contain one or both precious metals. This is quite different from

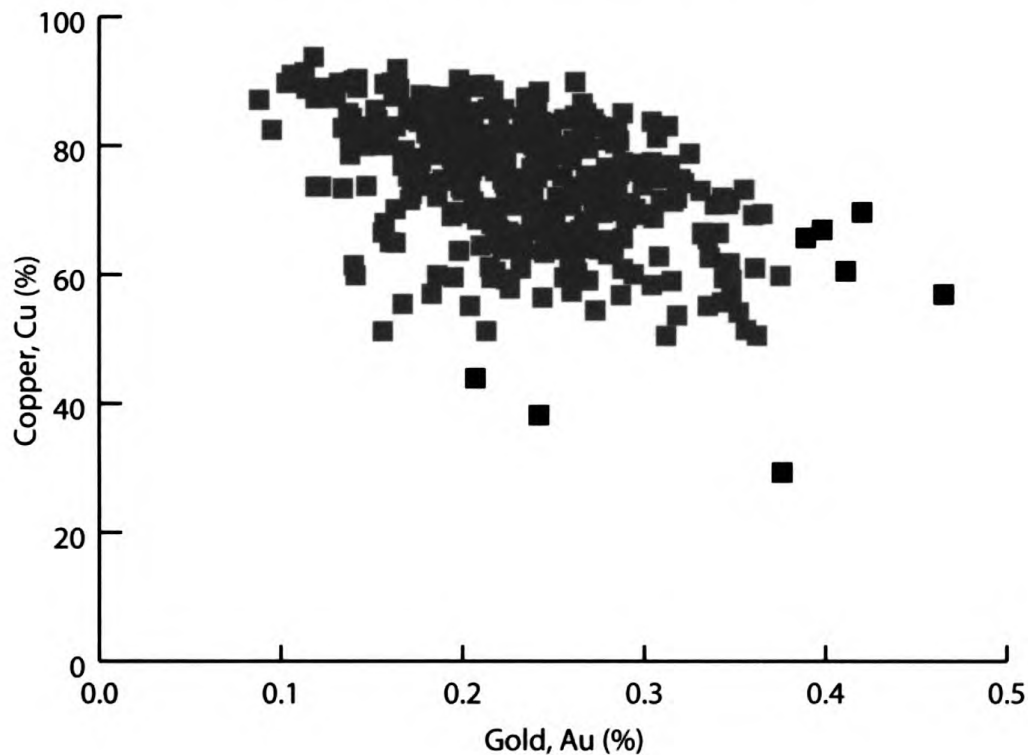


FIGURE 4. Copper vs. gold percentages.

previous studies of other, similar coins (Gaines et al. 2002), especially those looking specifically for gold (Gaines et al. 2001).

It is also noteworthy that every coin in this series contains small amounts of silver and gold in it at a time when French colonization of the area was underway. As the French colonized, it would seem logical that technologies known in France would be incorporated into industries in their protectorate of Annam and the surrounding regions. This might very well include advances in metallurgy and the extraction processes whereby naturally occurring gold and silver in copper ores are extracted from those ores. The reason for this suggestion is that mint masters are important figures within a government, and if information was being shared at high levels of the French colonial government and the imperial court, one can imagine the head of finance for the colony as well as the mint masters of the emperor to be persons who might communicate and discuss the details of their trades and work. Yet the presence of these traces argues that this technology sharing had not occurred (since contemporary coins of French Indo-China are of much cleaner composition). This then appears to be numismatic evidence either

of resistance to change on the part of Vietnamese foundry workers and mint masters, or of two parallel systems of money that were produced during the same time period without a concurrent exchange of technical knowledge.

Finally, the only other element of those mentioned in the procedure section that was found in any significant amount was iron. However, no pattern for iron percentages was discernable against any of the other major elements.

CONCLUSIONS

This series of Annamese coins appear consistently to be brass, but there are so many other elements present in significant amounts that one is tempted to call these samples "dirty" brass, or leaded brass. Certainly, lead seems to have been added in some almost random fashion. Additionally, the presence of gold and silver in so many samples appears to be either an indicator that refining techniques in the Annamese foundries were less exacting than similar procedures elsewhere, or an indicator that what was being used as starting metal was less rigorously examined, when compared to samples of a more distant past and those of other Eastern Asian countries. As well, this appears to indicate that two distinctly different numismatic systems were in use side by side. These coins were clearly made in the traditional, cast manner, while the coins of French Indo-China, minted in Paris in the modern western manner, circulated with them concurrently.

ACKNOWLEDGMENTS

The authors thank the United States National Science Foundation, grant number 98-51311 and the University of Detroit Mercy for the purchase of the EDXRF. We also thank the American Chemical Society's Project SEED for V.I.'s involvement in the research. As well, we thank Dr. Walter Siegl for critical comments at the beginning of the manuscript preparation.

APPENDIX

The following table presents the percentage compositions of the 373 coins for the ten elements included in this study.

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A1	0.185	0.004	0.085	84.751	11.577	0.316	0.204	2.238	0.059	0.206	0.160	0.000	0.167	0.047
A2	0.338	0.018	0.133	84.413	11.838	0.194	0.233	1.640	0.134	0.365	0.122	0.000	0.535	0.038
A3	0.120	0.028	0.049	50.488	35.272	0.536	0.312	12.284	0.153	0.247	0.195	0.001	0.221	0.092
A4	2.186	0.012	0.046	59.426	18.302	0.542	0.344	17.109	0.182	0.411	0.198	0.000	1.083	0.159
A5	0.226	0.010	0.046	73.660	14.761	0.240	0.204	6.522	0.218	0.427	0.166	0.000	3.431	0.090
A6	0.112	0.005	0.069	60.871	14.491	0.646	0.288	15.752	0.300	0.479	0.174	0.007	6.690	0.116
A7	0.137	0.004	0.063	70.949	11.226	0.351	0.346	14.618	0.188	0.565	0.200	0.000	1.277	0.076
A8	0.140	0.004	0.062	80.095	11.443	0.443	0.239	6.474	0.140	0.294	0.121	0.004	0.489	0.053
A9	0.870		0.112	72.552	17.006	0.219	0.267	7.880	0.193	0.381	0.146	0.001	0.292	0.050
A10	0.986	0.005	0.064	74.833	8.523	0.436	0.305	12.066	0.298	0.587	0.198	0.002	1.563	0.135
A11	1.674	0.000	0.034	63.900	12.484	0.480	0.275	19.437	0.106	0.316	0.182	0.000	0.931	0.182
A12	0.116	0.003	0.063	67.966	4.429	0.399	0.157	18.312	0.237	0.321	0.158	0.000	7.693	0.145
A13	0.352	0.000	0.053	85.576	6.703	0.330	0.176	5.691	0.187	0.397	0.173	0.000	0.297	0.064
A14	0.199	0.011	0.059	54.446	15.448	0.493	0.273	20.799	0.072	0.243	0.189	0.000	7.654	0.114
A15	0.612	0.011	0.054	85.879	9.241	0.210	0.217	2.448	0.145	0.384	0.093	0.002	0.664	0.041
A16	0.435	0.000	0.048	76.265	6.521	0.458	0.220	13.856	0.203	0.359	0.219	0.000	1.171	0.245
A17	0.109	0.015	0.055	73.740	17.688	0.118	0.147	5.820	0.225	0.318	0.199	0.006	1.475	0.084
A18	7.358	0.013	0.042	69.660	14.425	0.425	0.276	7.024	0.055	0.387	0.157	0.000	0.138	0.039
A19	0.304	0.002	0.052	85.617	9.683	0.254	0.241	2.718	0.070	0.347	0.202	0.003	0.450	0.057
A20	0.399	0.010	0.071	71.841	22.421	0.215	0.318	3.838	0.098	0.280	0.123	0.000	0.340	0.048
A21	0.312	0.004	0.085	70.846	12.853	0.412	0.339	11.458	0.106	0.280	0.191	0.000	2.906	0.109

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A22	0.227	0.007	0.080	74.823	16.554	0.396	0.320	6.694	0.161	0.370	0.150	0.000	0.154	0.061
A23	0.174	0.014	0.052	65.760	13.546	0.118	0.230	10.984	0.207	0.381	0.116	0.009	8.227	0.182
A24	0.353	0.000	0.056	64.479	6.981	0.492	0.210	21.547	0.080	0.296	0.240	0.015	5.090	0.162
A25	0.468	0.004	0.070	64.086	24.862	0.250	0.265	4.748	0.147	0.273	0.142	0.000	4.610	0.077
A26	0.413	0.002	0.058	80.747	11.084	0.423	0.286	6.009	0.107	0.336	0.219	0.003	0.232	0.081
A27	0.350	0.013	0.058	77.335	15.942	0.183	0.195	4.917	0.141	0.347	0.130	0.000	0.326	0.064
A28	0.540	0.000	0.076	71.246	13.957	0.452	0.260	12.363	0.225	0.408	0.123	0.002	0.221	0.128
A29	1.454	0.032	0.247	56.986	36.532	0.376	0.183	3.606	0.086	0.147	0.180	0.000	0.086	0.085
A30	0.162	0.005	0.044	66.943	6.952	0.556	0.398	24.261	0.019	0.346	0.081	0.000	0.144	0.089
A31	0.159	0.017	0.050	66.247	9.331	0.587	0.332	15.656	0.241	0.403	0.143	0.006	6.718	0.109
A32	0.391	0.017	0.176	71.567	19.815	0.288	0.309	6.556	0.110	0.382	0.080	0.000	0.243	0.066
A33	0.173	0.003	0.053	89.380	7.679	0.326	0.208	1.135	0.199	0.505	0.149	0.002	0.155	0.032
A34	0.117	0.007	0.088	82.953	13.738	0.106	0.143	2.153	0.113	0.195	0.103	0.000	0.258	0.024
A35	0.173	0.011	0.078	64.385	8.609	0.725	0.250	17.726	0.254	0.415	0.201	0.000	7.060	0.110
A36	0.314	0.015	0.112	79.064	12.470	0.364	0.182	6.609	0.152	0.281	0.178	0.000	0.199	0.060
A37	0.228	0.018	0.039	69.557	13.953	0.604	0.291	13.544	0.228	0.484	0.191	0.001	0.671	0.190
A38	0.192	0.008	0.063	80.813	9.116	0.291	0.261	6.546	0.126	0.355	0.187	0.000	1.986	0.057
A39	0.606	0.011	0.081	81.160	13.889	0.388	0.194	2.615	0.151	0.307	0.157	0.015	0.380	0.046
A40	0.149	0.011	0.042	55.698	16.629	0.562	0.343	17.843	0.293	0.439	0.231	0.000	7.655	0.105
A41	0.490	0.020	0.065	73.837	12.703	0.571	0.299	9.284	0.114	0.313	0.186	0.000	2.008	0.109
A42	0.304	0.019	0.087	73.630	22.586	0.207	0.119	2.217	0.076	0.120	0.082	0.000	0.479	0.074

A43	0.134	0.008	0.049	65.276	19.666	0.530	0.220	8.727	0.107	0.131	0.262	0.000	4.823	0.067
A44	0.959	0.004	0.036	82.508	11.166	0.572	0.204	3.445	0.156	0.404	0.200	0.000	0.294	0.052
A45	0.661	0.021	0.105	80.959	8.974	0.463	0.193	7.042	0.189	0.350	0.135	0.001	0.811	0.094
A46	0.274	0.001	0.067	87.369	9.853	0.240	0.128	1.296	0.091	0.233	0.170	0.000	0.212	0.066
A47	0.378	0.013	0.056	87.331	7.206	0.458	0.119	3.576	0.124	0.182	0.139	0.001	0.374	0.040
A48	0.215	0.004	0.053	76.224	7.514	0.376	0.238	13.560	0.228	0.389	0.114	0.002	0.979	0.104
A49	0.252	0.009	0.085	81.568	13.329	0.415	0.208	2.919	0.121	0.343	0.158	0.000	0.304	0.289
A50	0.213	0.008	0.080	71.414	10.978	0.493	0.228	9.285	0.113	0.314	0.151	0.000	6.614	0.108
A51	0.374	0.005	0.076	70.692	13.542	0.567	0.258	12.722	0.146	0.376	0.160	0.000	0.875	0.207
A52	0.463	0.000	0.055	74.198	13.783	0.614	0.322	9.320	0.241	0.396	0.215	0.000	0.313	0.081
A53	0.135	0.003	0.067	60.516	9.086	0.509	0.411	27.071	0.212	0.490	0.229	0.000	1.156	0.114
A54	0.200	0.005	0.052	61.655	6.833	0.933	0.262	18.619	0.165	0.313	0.249	0.000	10.520	0.194
A55	0.143	0.012	0.058	74.855	8.867	0.492	0.301	11.142	0.160	0.432	0.182	0.010	3.285	0.060
A56	0.260	0.015	0.066	82.748	9.425	0.457	0.237	5.690	0.119	0.373	0.226	0.003	0.291	0.088
A57	3.526	0.008	0.060	74.549	16.536	0.297	0.194	3.880	0.098	0.228	0.212	0.000	0.342	0.070
A58	0.184	0.004	0.096	84.730	10.738	0.403	0.204	2.979	0.092	0.317	0.114	0.000	0.111	0.029
A59	0.151	0.003	0.063	89.095	6.307	0.260	0.206	1.582	0.119	0.382	0.131	0.001	1.665	0.034
A60	0.101	0.017	0.052	77.778	10.192	0.345	0.260	9.259	0.169	0.477	0.116	0.000	1.153	0.082
A61	0.199	0.009	0.077	89.744	7.969	0.188	0.132	1.010	0.084	0.262	0.161	0.002	0.124	0.040
A62	3.383	0.008	0.072	74.380	14.577	0.318	0.203	5.911	0.162	0.332	0.144	0.000	0.462	0.048
A63	0.098	0.002	0.157	79.096	16.696	0.215	0.197	2.755	0.173	0.314	0.087	0.000	0.170	0.041
A64	0.323	0.006	0.112	79.944	15.819	0.240	0.146	2.584	0.051	0.175	0.132	0.000	0.427	0.041

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A65	0.240	0.011	0.126	83.585	10.803	0.263	0.236	2.999	0.257	0.532	0.216	0.012	0.573	0.148
A66	0.139	0.012	0.069	66.246	17.323	0.404	0.235	11.420	0.322	0.585	0.210	0.000	2.861	0.174
A67	0.228	0.004	0.072	67.520	19.960	0.616	0.251	9.797	0.202	0.317	0.216	0.003	0.716	0.098
A68	0.237	0.017	0.108	83.122	9.801	0.296	0.245	4.565	0.185	0.516	0.134	0.000	0.671	0.104
A69	0.190	0.007	0.076	80.080	12.614	0.622	0.224	4.616	0.250	0.481	0.216	0.000	0.577	0.046
A70	0.132	0.000	0.067	51.410	32.643	0.538	0.356	7.672	0.257	0.363	0.242	0.014	6.036	0.269
A71	0.152	0.009	0.076	72.063	21.522	0.202	0.186	3.496	0.085	0.160	0.114	0.003	1.835	0.098
A72	0.185	0.009	0.027	63.860	7.302	0.426	0.262	25.665	0.194	0.404	0.183	0.000	1.382	0.100
A73	0.370	0.016	0.045	89.469	7.184	0.315	0.212	1.613	0.118	0.374	0.116	0.000	0.132	0.036
A74	0.213	0.011	0.054	79.563	10.255	0.293	0.269	3.579	0.136	0.326	0.086	0.010	5.004	0.201
A75	0.173	0.009	0.044	69.050	22.246	0.163	0.194	4.246	0.207	0.276	0.105	0.000	3.230	0.059
A76	0.266	0.014	0.064	88.163	8.851	0.253	0.199	1.398	0.055	0.276	0.112	0.012	0.272	0.064
A77	0.168	0.012	0.061	66.455	15.928	0.301	0.341	12.206	0.168	0.318	0.145	0.000	3.794	0.102
A78	0.391	0.015	0.060	73.590	17.511	0.326	0.280	6.775	0.181	0.391	0.184	0.000	0.229	0.068
A79	0.426	0.018	0.047	59.567	21.269	0.478	0.256	8.602	0.171	0.272	0.127	0.000	8.675	0.092
A80	0.175	0.016	0.124	88.521	7.227	0.268	0.198	2.533	0.137	0.388	0.131	0.000	0.206	0.077
A81	0.199	0.002	0.059	74.990	10.065	0.494	0.241	12.437	0.298	0.467	0.345	0.000	0.437	0.048
A82	0.127	0.013	0.099	84.791	7.755	0.262	0.179	4.796	0.149	0.345	0.156	0.000	1.283	0.043
A83	1.069	0.029	0.189	82.884	11.480	0.303	0.235	2.996	0.088	0.353	0.084	0.000	0.258	0.031
A84	0.141	0.000	0.064	91.905	4.658	0.242	0.164	1.286	0.099	0.286	0.148	0.000	0.962	0.042
A85	0.322	0.020	0.110	75.985	18.232	0.375	0.239	4.140	0.103	0.235	0.086	0.000	0.120	0.033

A86	0.139	0.007	0.077	90.972	4.759	0.135	0.106	0.890	0.101	0.254	0.118	0.000	2.381	0.061
A87	0.661	0.016	0.101	43.908	52.632	0.191	0.207	2.067	0.003	0.073	0.039	0.002	0.083	0.017
A88	0.197	0.004	0.053	87.029	6.899	0.331	0.185	4.106	0.163	0.389	0.188	0.000	0.431	0.026
A89	0.732	0.022	0.117	79.584	15.247	0.331	0.208	3.255	0.132	0.191	0.064	0.002	0.097	0.018
A90	0.387	0.007	0.098	79.147	14.573	0.199	0.192	4.391	0.069	0.211	0.115	0.002	0.509	0.100
A91	0.259	0.018	0.139	88.983	7.470	0.280	0.142	1.927	0.132	0.259	0.111	0.000	0.187	0.094
A92	0.203	0.015	0.070	84.117	6.551	0.630	0.272	7.197	0.077	0.456	0.165	0.000	0.190	0.057
A93	0.161	0.002	0.088	85.732	10.313	0.260	0.192	2.024	0.193	0.379	0.128	0.000	0.478	0.050
A94	0.245	0.008	0.064	78.570	16.429	0.236	0.187	3.403	0.102	0.288	0.149	0.000	0.199	0.118
A95	0.107	0.006	0.080	77.189	6.121	0.610	0.293	11.005	0.253	0.434	0.195	0.001	3.616	0.091
A96	0.695	0.018	0.144	78.063	13.837	0.299	0.174	5.994	0.153	0.308	0.108	0.004	0.150	0.053
A97	0.237	0.012	0.118	64.926	28.469	0.333	0.163	4.388	0.150	0.263	0.207	0.003	0.681	0.048
A98	0.910	0.026	0.148	83.885	7.044	0.471	0.192	6.233	0.155	0.336	0.178	0.006	0.315	0.100
A99	7.099	0.000	0.043	70.407	13.248	0.380	0.207	7.605	0.189	0.374	0.145	0.000	0.233	0.068
A100	0.156	0.007	0.083	84.026	5.744	0.383	0.170	5.477	0.097	0.243	0.173	0.000	3.420	0.020
A101	0.141	0.001	0.069	82.917	5.977	0.408	0.276	6.278	0.247	0.480	0.218	0.002	2.921	0.064
A102	1.535	0.002	0.070	83.422	9.016	0.487	0.187	4.308	0.098	0.411	0.223	0.000	0.185	0.056
A103	0.247	0.002	0.144	71.973	11.646	0.307	0.276	12.507	0.233	0.473	0.076	0.000	2.005	0.110
A104	0.284	0.007	0.100	38.193	44.896	0.305	0.242	9.976	0.079	0.105	0.129	0.000	5.247	0.437
A105	0.203	0.007	0.091	73.557	17.957	0.292	0.199	6.215	0.176	0.353	0.115	0.000	0.796	0.040
A106	0.380	0.000	0.049	51.198	22.758	0.353	0.156	16.224	0.262	0.296	0.122	0.000	7.451	0.751
A107	0.282	0.017	0.094	78.607	15.371	0.443	0.138	4.292	0.115	0.216	0.203	0.000	0.147	0.076

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A108	0.445	0.015	0.148	81.542	11.242	0.334	0.196	5.252	0.152	0.353	0.115	0.000	0.167	0.042
A109	0.280	0.007	0.099	73.753	20.831	0.235	0.181	3.742	0.077	0.211	0.130	0.001	0.414	0.039
A110	0.210	0.004	0.086	80.112	13.506	0.219	0.200	4.673	0.139	0.350	0.114	0.000	0.327	0.060
A111	0.201	0.012	0.057	88.847	7.822	0.233	0.114	2.060	0.088	0.264	0.148	0.000	0.111	0.042
A112	0.141	0.001	0.069	75.888	10.232	0.279	0.280	10.454	0.196	0.527	0.152	0.006	1.706	0.066
A113	0.164	0.007	0.102	76.825	13.652	0.228	0.209	1.693	0.068	0.250	0.148	0.006	6.581	0.065
A114	0.458	0.012	0.070	87.607	7.862	0.333	0.162	2.708	0.128	0.336	0.147	0.010	0.135	0.031
A115	0.320	0.010	0.083	82.043	11.606	0.361	0.195	4.673	0.111	0.294	0.119	0.005	0.139	0.041
A116	0.464	0.006	0.091	82.114	14.044	0.262	0.243	2.040	0.092	0.302	0.118	0.000	0.180	0.044
A117	0.136	0.009	0.049	76.002	14.792	0.470	0.291	6.920	0.208	0.431	0.278	0.000	0.329	0.085
A118	0.170	0.000	0.058	85.659	10.081	0.252	0.223	2.385	0.147	0.422	0.123	0.000	0.469	0.013
A119	0.115	0.002	0.054	89.848	7.742	0.237	0.139	1.005	0.115	0.237	0.126	0.007	0.353	0.020
A120	0.168	0.008	0.072	67.257	12.348	0.425	0.269	17.516	0.318	0.596	0.174	0.005	0.762	0.082
A121	0.190	0.006	0.054	73.377	22.236	0.460	0.134	3.167	0.000	0.071	0.139	0.000	0.122	0.045
A122	0.425	0.017	0.084	74.174	17.834	0.432	0.281	5.908	0.157	0.338	0.107	0.004	0.203	0.037
A123	4.958	0.006	0.109	69.575	9.736	0.469	0.277	12.997	0.312	0.601	0.210	0.003	0.677	0.069
A124	3.149	0.003	0.117	60.432	20.292	0.590	0.218	13.595	0.260	0.460	0.264	0.000	0.454	0.168
A125	0.654	0.022	0.068	81.807	13.073	0.309	0.217	2.987	0.054	0.318	0.125	0.010	0.307	0.050
A126	0.129	0.001	0.059	74.926	11.358	0.301	0.230	10.789	0.238	0.438	0.182	0.004	1.204	0.142
A127	0.225	0.012	0.117	86.283	11.260	0.222	0.178	0.721	0.082	0.238	0.125	0.007	0.472	0.057
A128	1.270	0.006	0.058	70.037	9.340	0.560	0.249	15.587	0.364	0.545	0.246	0.000	1.591	0.147

A129	0.765	0.006	0.053	85.301	11.166	0.273	0.178	1.478	0.078	0.314	0.138	0.000	0.221	0.029
A130	0.138	0.007	0.060	83.090	12.853	0.184	0.188	2.568	0.088	0.230	0.125	0.009	0.427	0.033
A131	0.282	0.004	0.046	80.005	13.644	0.405	0.255	4.471	0.168	0.357	0.158	0.000	0.175	0.028
A132	0.300	0.008	0.103	80.863	14.426	0.261	0.195	2.767	0.154	0.344	0.126	0.000	0.370	0.084
A133	1.118	0.025	0.075	84.845	9.288	0.247	0.170	3.153	0.168	0.361	0.085	0.000	0.429	0.036
A134	0.119	0.002	0.045	55.150	24.511	0.300	0.335	17.736	0.202	0.407	0.194	0.003	0.911	0.083
A135	0.190	0.032	0.066	56.918	25.102	0.761	0.465	14.538	0.372	0.515	0.169	0.000	0.775	0.097
A136	0.119	0.011	0.072	90.348	4.847	0.363	0.142	2.501	0.059	0.243	0.196	0.003	1.037	0.058
A137	0.409	0.000	0.040	58.358	16.424	0.340	0.304	21.719	0.248	0.418	0.181	0.000	1.464	0.094
A138	0.465	0.002	0.061	76.557	13.028	0.571	0.279	8.109	0.153	0.264	0.204	0.005	0.221	0.079
A139	0.225	0.015	0.048	65.615	18.872	0.419	0.288	13.254	0.262	0.463	0.152	0.011	0.309	0.066
A140	0.264	0.001	0.066	78.418	15.493	0.326	0.201	4.433	0.143	0.263	0.150	0.000	0.176	0.065
A141	0.079	0.003	0.083	88.789	8.871	0.099	0.165	0.877	0.108	0.309	0.101	0.000	0.487	0.029
A142	3.137	0.000	0.072	77.522	14.616	0.168	0.177	1.225	0.156	0.399	0.097	0.001	2.386	0.046
A143	0.091	0.000	0.075	83.561	13.713	0.051	0.153	1.350	0.036	0.239	0.077	0.000	0.626	0.027
A144	0.145	0.000	0.048	66.498	16.261	0.659	0.332	14.010	0.217	0.480	0.293	0.000	0.983	0.076
A145	0.237	0.014	0.113	78.983	16.335	0.314	0.222	2.413	0.189	0.459	0.155	0.000	0.509	0.057
A146	0.212	0.009	0.070	68.864	13.006	0.403	0.238	10.137	0.215	0.323	0.213	0.000	6.138	0.171
A147	0.160	0.002	0.083	90.096	7.826	0.130	0.140	0.588	0.123	0.305	0.161	0.000	0.332	0.056
A148	0.184	0.006	0.052	61.173	10.152	0.763	0.215	19.739	0.252	0.393	0.232	0.003	6.720	0.115
A149	0.215	0.006	0.071	68.930	7.567	0.701	0.215	7.465	0.139	0.289	0.259	0.003	14.032	0.110
A150	0.529	0.000	0.109	93.740	4.068	0.229	0.118	0.775	0.069	0.179	0.057	0.000	0.110	0.018

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A151	0.267	0.000	0.057	83.738	9.065	0.471	0.304	5.103	0.204	0.426	0.158	0.000	0.167	0.039
A152	0.259	0.002	0.056	63.899	19.557	0.328	0.251	14.045	0.280	0.397	0.195	0.003	0.596	0.132
A153	0.188	0.000	0.049	63.922	5.390	0.825	0.222	14.823	0.120	0.285	0.292	0.000	13.695	0.189
A154	0.123	0.005	0.044	85.037	11.303	0.347	0.288	2.122	0.111	0.348	0.136	0.001	0.095	0.039
A155	0.225	0.012	0.044	83.047	5.971	0.293	0.313	8.523	0.223	0.436	0.201	0.000	0.645	0.067
A156	0.160	0.013	0.075	85.056	10.986	0.379	0.268	2.245	0.139	0.417	0.103	0.000	0.128	0.030
A157	0.147	0.003	0.055	82.438	15.147	0.256	0.095	1.396	0.041	0.099	0.162	0.000	0.122	0.037
A158	0.433	0.004	0.040	85.548	8.859	0.352	0.152	3.602	0.170	0.380	0.173	0.000	0.210	0.077
A159	0.207	0.006	0.049	74.745	8.830	0.248	0.189	13.367	0.224	0.469	0.193	0.003	1.360	0.111
A160	0.139	0.005	0.117	72.322	12.685	0.256	0.263	10.191	0.303	0.506	0.176	0.000	2.911	0.124
A161	0.201	0.005	0.026	76.527	13.764	0.583	0.238	7.639	0.154	0.357	0.240	0.000	0.190	0.076
A162	0.215	0.000	0.045	60.038	20.148	0.309	0.294	16.588	0.230	0.394	0.168	0.000	1.507	0.064
A163	0.203	0.002	0.093	66.939	15.089	0.410	0.220	15.093	0.251	0.433	0.339	0.009	0.810	0.107
A164	0.192	0.000	0.048	59.270	3.968	0.754	0.224	27.004	0.056	0.259	0.184	0.000	7.818	0.222
A165	0.266	0.000	0.048	71.020	18.493	0.487	0.272	7.986	0.182	0.391	0.252	0.003	0.552	0.048
A166	0.195	0.002	0.036	69.231	12.991	0.932	0.360	14.436	0.235	0.468	0.332	0.000	0.702	0.080
A167	0.131	0.006	0.049	63.930	10.528	0.692	0.254	15.351	0.263	0.405	0.221	0.000	8.037	0.134
A168	0.137	0.009	0.071	89.703	7.858	0.091	0.103	0.900	0.074	0.254	0.124	0.000	0.595	0.080
A169	0.109	0.009	0.086	66.553	9.475	0.568	0.256	16.656	0.143	0.362	0.170	0.011	5.522	0.079
A170	0.201	0.002	0.073	72.396	16.313	0.189	0.281	9.196	0.149	0.381	0.103	0.000	0.612	0.102
A171	0.252	0.008	0.071	80.659	12.302	0.265	0.221	5.305	0.090	0.279	0.189	0.000	0.299	0.059

A172	0.272	0.021	0.143	83.700	8.170	0.415	0.243	6.049	0.150	0.410	0.094	0.000	0.256	0.078
A173	0.152	0.008	0.051	77.777	18.598	0.196	0.204	1.959	0.097	0.257	0.174	0.002	0.474	0.050
A174	0.269	0.003	0.084	58.994	14.795	0.292	0.315	19.144	0.202	0.295	0.200	0.005	5.126	0.274
A175	1.146	0.009	0.049	56.360	28.634	0.434	0.348	12.169	0.083	0.186	0.110	0.012	0.402	0.059
A176	0.206	0.007	0.106	64.082	18.505	0.181	0.283	13.652	0.181	0.300	0.113	0.000	2.185	0.199
A177	0.232	0.002	0.085	86.524	8.077	0.338	0.266	3.518	0.096	0.380	0.188	0.002	0.225	0.067
A178	0.206	0.006	0.062	81.123	13.833	0.334	0.149	3.217	0.106	0.266	0.157	0.000	0.465	0.077
A179	0.276	0.003	0.046	91.383	5.578	0.241	0.113	1.458	0.055	0.127	0.109	0.000	0.545	0.065
A180	0.365	0.017	0.140	84.542	11.076	0.292	0.188	2.211	0.108	0.216	0.088	0.003	0.606	0.148
A181	0.482	0.002	0.068	81.390	14.529	0.153	0.213	2.297	0.025	0.200	0.119	0.000	0.482	0.041
A182	1.172	0.003	0.041	80.823	13.720	0.348	0.280	2.670	0.149	0.440	0.103	0.004	0.172	0.075
A183	0.174	0.008	0.104	84.559	9.915	0.247	0.196	3.819	0.096	0.309	0.100	0.002	0.424	0.047
A184	2.883	0.022	0.077	75.237	14.333	0.436	0.255	5.137	0.160	0.424	0.250	0.000	0.648	0.138
A185	0.264	0.012	0.135	71.614	14.645	0.504	0.347	9.637	0.214	0.348	0.120	0.010	1.981	0.170
A186	1.285	0.011	0.119	74.200	16.814	0.365	0.231	5.933	0.127	0.336	0.128	0.000	0.365	0.086
A187	1.436	0.010	0.088	80.034	13.980	0.261	0.157	2.966	0.166	0.374	0.188	0.003	0.250	0.087
A188	0.285	0.001	0.048	81.051	10.386	0.504	0.224	4.418	0.176	0.430	0.248	0.008	2.143	0.079
A189	0.237	0.010	0.076	63.391	26.606	0.530	0.245	6.777	0.094	0.177	0.201	0.000	1.578	0.077
A190	0.620	0.015	0.041	81.559	7.836	0.232	0.211	8.349	0.124	0.360	0.160	0.000	0.403	0.091
A191	0.160	0.010	0.031	89.784	5.444	0.174	0.161	3.295	0.067	0.232	0.245	0.000	0.332	0.064
A192	0.154	0.007	0.060	89.892	7.052	0.217	0.262	0.956	0.150	0.472	0.287	0.012	0.375	0.105
A193	0.297	0.004	0.049	80.018	11.459	0.346	0.268	6.312	0.145	0.400	0.262	0.000	0.330	0.112

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A194	0.725	0.022	0.120	78.763	9.673	0.592	0.325	8.793	0.106	0.427	0.119	0.000	0.248	0.087
A195	0.223	0.009	0.136	61.770	18.673	0.435	0.347	14.304	0.201	0.472	0.155	0.008	3.064	0.202
A196	0.061	0.006	0.058	82.956	7.517	0.292	0.266	7.158	0.198	0.499	0.170	0.000	0.754	0.063
A197	1.317	0.003	0.104	79.283	5.160	0.654	0.187	10.799	0.191	0.389	0.219	0.002	1.449	0.243
A198	0.144	0.009	0.083	76.114	12.752	0.400	0.307	8.939	0.189	0.404	0.183	0.000	0.396	0.079
A199	0.344	0.006	0.052	81.254	9.339	0.479	0.307	6.695	0.230	0.516	0.250	0.000	0.291	0.237
A200	0.648	0.011	0.066	73.184	13.875	0.655	0.355	10.481	0.100	0.306	0.076	0.000	0.181	0.062
A201	0.544	0.016	0.037	69.677	16.937	0.473	0.196	10.893	0.220	0.309	0.120	0.000	0.509	0.071
A202	0.738	0.000	0.040	81.275	8.813	0.498	0.209	7.173	0.132	0.265	0.163	0.000	0.625	0.067
A203	0.255	0.000	0.049	72.921	11.696	0.584	0.285	12.945	0.222	0.402	0.186	0.001	0.428	0.027
A204	0.447	0.020	0.064	73.058	6.789	0.517	0.200	17.029	0.185	0.306	0.157	0.000	1.186	0.042
A205	0.484	0.009	0.061	85.907	5.731	0.350	0.170	6.505	0.106	0.313	0.088	0.006	0.237	0.033
A206	0.145	0.008	0.035	83.245	9.857	0.511	0.273	4.594	0.109	0.366	0.183	0.000	0.622	0.053
A207	0.223	0.010	0.068	79.261	14.793	0.265	0.168	3.744	0.102	0.288	0.161	0.000	0.813	0.104
A208	0.097	0.000	0.074	63.875	13.653	0.123	0.242	19.354	0.266	0.371	0.172	0.000	1.660	0.110
A209	0.233	0.002	0.075	63.678	26.933	0.395	0.198	7.904	0.098	0.171	0.141	0.003	0.133	0.035
A210	0.268	0.005	0.043	78.554	12.675	0.511	0.255	6.848	0.139	0.386	0.150	0.000	0.134	0.033
A211	0.222	0.016	0.066	79.290	11.368	0.188	0.210	2.127	0.103	0.253	0.100	0.019	6.012	0.025
A212	0.141	0.006	0.075	85.681	10.177	0.376	0.214	2.287	0.120	0.347	0.181	0.000	0.294	0.101
A213	0.263	0.006	0.045	53.667	7.227	0.464	0.318	32.721	0.290	0.460	0.144	0.000	4.269	0.125
A214	0.242	0.012	0.095	69.498	25.315	0.120	0.202	3.418	0.113	0.278	0.149	0.000	0.509	0.049

A215	0.309	0.018	0.050	78.142	5.515	1.158	0.194	12.441	0.114	0.305	0.121	0.000	1.552	0.080
A216	0.239	0.003	0.056	74.553	7.334	0.562	0.230	6.875	0.174	0.330	0.123	0.000	9.444	0.076
A217	0.459	0.004	0.046	75.353	13.053	0.469	0.268	9.328	0.160	0.332	0.236	0.000	0.213	0.079
A218	0.285	0.006	0.073	67.053	7.577	0.681	0.245	14.201	0.120	0.300	0.233	0.000	8.840	0.385
A219	0.583	0.005	0.042	70.137	11.834	0.364	0.163	7.179	0.104	0.257	0.176	0.023	9.019	0.111
A220	1.135	0.012	0.046	71.334	17.805	0.405	0.206	8.297	0.143	0.274	0.101	0.009	0.166	0.065
A221	0.592	0.019	0.071	82.772	8.690	0.433	0.285	6.274	0.158	0.416	0.137	0.001	0.108	0.043
A222	0.255	0.008	0.073	60.289	19.072	0.370	0.263	8.743	0.187	0.304	0.186	0.000	10.185	0.065
A223	0.425	0.004	0.051	68.770	21.758	0.510	0.305	6.845	0.210	0.379	0.242	0.010	0.389	0.104
A224	0.218	0.008	0.059	79.581	10.187	0.402	0.252	7.820	0.244	0.519	0.203	0.000	0.424	0.084
A225	0.318	0.017	0.076	83.066	12.457	0.272	0.220	2.598	0.150	0.299	0.131	0.009	0.318	0.067
A226	4.078	0.017	0.054	73.649	15.934	0.437	0.261	4.492	0.200	0.355	0.218	0.000	0.239	0.067
A227	1.369	0.025	0.184	70.702	13.352	0.463	0.228	12.070	0.107	0.240	0.256	0.017	0.877	0.111
A228	0.158	0.002	0.110	78.077	13.262	0.228	0.240	6.417	0.048	0.297	0.082	0.001	1.047	0.030
A229	0.202	0.029	0.093	86.426	10.835	0.210	0.194	1.022	0.103	0.401	0.115	0.001	0.315	0.054
A230	0.216	0.013	0.068	83.805	12.291	0.247	0.187	1.459	0.087	0.292	0.166	0.000	1.078	0.090
A231	0.117	0.010	0.043	89.565	5.370	0.388	0.157	2.983	0.215	0.415	0.164	0.006	0.546	0.022
A232	0.466	0.009	0.069	62.812	15.403	0.635	0.308	16.074	0.108	0.210	0.319	0.000	3.483	0.104
A233	0.243	0.001	0.037	68.723	15.676	0.355	0.290	12.630	0.231	0.421	0.215	0.017	1.049	0.112
A234	0.097	0.009	0.081	87.054	7.098	0.385	0.217	3.640	0.077	0.293	0.173	0.000	0.853	0.025
A235	0.335	0.009	0.052	83.678	10.987	0.218	0.176	3.900	0.095	0.220	0.133	0.000	0.148	0.049
A236	20.557	0.000	0.130	57.827	9.899	0.142	0.226	8.404	0.171	0.380	0.280	0.014	1.743	0.227

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A237	0.155	0.017	0.111	69.397	15.522	0.555	0.365	12.496	0.147	0.367	0.174	0.002	0.519	0.173
A238	0.431	0.000	0.046	60.966	5.479	1.180	0.232	13.985	0.179	0.318	0.343	0.008	16.682	0.152
A239	0.203	0.013	0.039	74.142	7.111	0.466	0.186	7.353	0.121	0.236	0.127	0.008	9.946	0.048
A240	0.620	0.015	0.081	83.998	10.788	0.281	0.153	3.217	0.138	0.354	0.140	0.000	0.170	0.045
A241	0.182	0.011	0.039	61.439	20.692	0.220	0.140	11.198	0.238	0.334	0.204	0.014	5.134	0.153
A242	0.196	0.000	0.054	59.897	9.949	0.296	0.186	21.534	0.286	0.398	0.210	0.000	6.875	0.118
A243	0.115	0.002	0.101	62.623	16.917	0.123	0.336	16.956	0.295	0.548	0.118	0.004	1.774	0.087
A244	0.234	0.001	0.047	80.934	6.063	0.332	0.188	11.098	0.143	0.379	0.175	0.000	0.380	0.026
A245	4.773	0.000	0.095	72.285	13.717	0.519	0.271	7.366	0.185	0.386	0.187	0.002	0.117	0.096
A246	0.095	0.012	0.054	65.012	19.471	0.272	0.160	13.488	0.161	0.277	0.120	0.001	0.790	0.088
A247	0.284	0.001	0.067	84.101	9.018	0.540	0.256	4.821	0.094	0.384	0.111	0.006	0.280	0.036
A248	0.208	0.001	0.065	84.666	9.334	0.380	0.262	3.952	0.068	0.273	0.174	0.003	0.589	0.025
A249	0.175	0.002	0.042	65.015	26.156	0.192	0.273	6.538	0.139	0.263	0.074	0.000	1.100	0.030
A250	0.161	0.006	0.041	59.470	10.935	0.366	0.216	18.691	0.249	0.436	0.254	0.013	8.890	0.274
A251	0.354	0.014	0.060	76.900	11.687	0.332	0.167	9.590	0.176	0.301	0.180	0.003	0.196	0.040
A252	0.628	0.013	0.050	74.870	16.299	0.474	0.227	6.446	0.196	0.386	0.204	0.009	0.135	0.062
A253	0.198	0.003	0.072	79.419	7.739	0.751	0.219	10.467	0.300	0.473	0.159	0.000	0.139	0.061
A254	0.104	0.007	0.138	82.747	14.634	0.120	0.134	1.328	0.026	0.154	0.113	0.000	0.451	0.046
A255	0.326	0.029	0.107	81.778	12.225	0.242	0.203	3.138	0.165	0.310	0.102	0.006	1.308	0.060
A256	0.139	0.012	0.078	68.295	22.100	0.224	0.269	6.750	0.135	0.277	0.121	0.000	1.551	0.050
A257	4.410	0.000	0.081	74.099	12.575	0.496	0.273	6.590	0.281	0.514	0.253	0.003	0.307	0.119

A258	0.204	0.015	0.101	74.164	16.888	0.231	0.223	6.355	0.217	0.330	0.135	0.000	0.909	0.227
A259	0.161	0.002	0.053	66.671	7.782	0.496	0.225	19.875	0.314	0.493	0.143	0.000	3.549	0.236
A260	0.193	0.004	0.044	66.912	7.907	0.254	0.265	16.478	0.342	0.511	0.121	0.000	6.695	0.275
A261	0.748	0.014	0.072	68.693	18.682	0.436	0.212	10.090	0.211	0.323	0.132	0.002	0.356	0.030
A262	0.720	0.016	0.073	81.346	12.364	0.228	0.159	4.321	0.139	0.274	0.097	0.014	0.205	0.044
A263	0.176	0.007	0.060	76.175	8.934	0.647	0.244	12.423	0.256	0.462	0.176	0.002	0.369	0.070
A264	0.184	0.005	0.063	80.768	9.711	0.320	0.140	7.257	0.147	0.306	0.137	0.001	0.890	0.069
A265	0.169	0.007	0.064	73.793	11.460	0.430	0.239	11.307	0.173	0.369	0.182	0.000	1.725	0.082
A266	0.428	0.004	0.044	76.125	6.141	0.466	0.205	11.484	0.239	0.377	0.146	0.013	4.190	0.136
A267	0.119	0.000	0.064	63.129	23.322	0.335	0.280	9.869	0.232	0.481	0.113	0.007	1.926	0.125
A268	1.026	0.004	0.084	68.517	17.380	0.480	0.208	11.553	0.127	0.174	0.151	0.000	0.185	0.111
A269	0.211	0.013	0.060	83.623	10.964	0.347	0.193	3.802	0.045	0.212	0.110	0.012	0.344	0.064
A270	0.535	0.019	0.074	59.796	17.233	0.396	0.375	20.452	0.252	0.389	0.128	0.000	0.273	0.078
A271	0.193	0.004	0.092	74.810	18.496	0.249	0.222	4.683	0.121	0.304	0.124	0.000	0.674	0.026
A272	0.215	0.001	0.073	67.869	18.548	0.359	0.267	10.161	0.122	0.190	0.172	0.007	1.956	0.060
A273	0.160	0.006	0.112	77.315	10.162	0.561	0.247	9.049	0.205	0.467	0.171	0.000	1.483	0.064
A274	3.407	0.018	0.067	57.334	9.344	0.489	0.260	26.236	0.343	0.500	0.283	0.010	1.474	0.234
A275	0.205	0.000	0.074	56.428	25.903	0.274	0.244	13.878	0.171	0.221	0.191	0.000	2.348	0.062
A276	0.425	0.012	0.065	83.508	8.757	0.345	0.248	5.089	0.118	0.380	0.146	0.000	0.814	0.093
A277	0.281	0.002	0.032	64.079	14.011	0.431	0.277	15.430	0.206	0.374	0.154	0.000	4.567	0.157
A278	0.993	0.012	0.068	77.890	13.621	0.451	0.244	5.911	0.115	0.264	0.109	0.000	0.263	0.059
A279	1.364	0.020	0.092	71.347	21.521	0.344	0.316	4.162	0.121	0.308	0.155	0.000	0.214	0.033

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A280	0.132	0.007	0.098	70.359	22.323	0.205	0.218	5.883	0.205	0.301	0.123	0.001	0.129	0.016
A281	0.542	0.006	0.032	72.513	5.751	0.323	0.172	13.526	0.128	0.317	0.198	0.000	6.314	0.178
A282	0.655	0.000	0.029	50.525	34.122	0.593	0.362	12.877	0.047	0.150	0.124	0.000	0.442	0.075
A283	0.139	0.007	0.067	80.345	15.679	0.137	0.284	2.464	0.155	0.323	0.108	0.000	0.268	0.025
A284	7.028	0.000	0.055	69.859	16.935	0.284	0.285	4.684	0.051	0.307	0.091	0.004	0.380	0.037
A285	0.241	0.010	0.100	74.909	14.808	0.431	0.314	8.389	0.168	0.295	0.110	0.000	0.200	0.026
A286	0.295	0.010	0.032	54.130	33.776	0.402	0.352	8.742	0.150	0.264	0.165	0.004	1.629	0.047
A287	0.169	0.008	0.047	67.832	6.195	0.491	0.216	18.754	0.248	0.359	0.220	0.006	5.312	0.142
A288	1.365	0.036	0.208	83.099	10.037	0.394	0.249	3.240	0.111	0.338	0.144	0.000	0.708	0.071
A289	0.274	0.006	0.085	85.168	10.416	0.155	0.204	2.671	0.065	0.258	0.146	0.001	0.473	0.078
A290	0.172	0.006	0.054	87.862	7.898	0.215	0.177	2.562	0.134	0.337	0.100	0.002	0.447	0.034
A291	0.134	0.006	0.048	65.696	17.996	0.315	0.389	12.568	0.141	0.314	0.112	0.000	2.175	0.106
A292	0.173	0.014	0.030	71.945	6.808	1.154	0.343	16.483	0.250	0.498	0.228	0.000	1.274	0.801
A293	0.314	0.011	0.081	88.374	7.885	0.252	0.242	1.664	0.142	0.434	0.162	0.000	0.349	0.090
A294	0.163	0.005	0.058	71.945	14.918	0.411	0.239	9.614	0.209	0.385	0.195	0.009	1.787	0.062
A295	0.088	0.009	0.058	64.809	18.477	0.412	0.218	9.748	0.174	0.324	0.200	0.011	5.365	0.108
A296	0.130	0.009	0.074	88.252	6.595	0.188	0.119	1.561	0.037	0.220	0.077	0.003	2.640	0.095
A297	0.436	0.000	0.033	69.277	18.383	0.220	0.300	10.435	0.164	0.378	0.120	0.000	0.195	0.058
A298	0.353	0.010	0.040	87.444	10.541	0.195	0.130	0.816	0.062	0.197	0.119	0.009	0.068	0.016
A299	0.599	0.000	0.046	69.145	13.468	0.369	0.241	12.861	0.296	0.513	0.354	0.013	1.939	0.156
A300	0.133	0.000	0.075	84.331	8.098	0.419	0.206	5.581	0.173	0.348	0.222	0.000	0.389	0.025

A301	0.251	0.003	0.039	73.664	3.488	0.597	0.122	6.329	0.113	0.201	0.271	0.000	14.811	0.111
A302	0.122	0.005	0.075	90.255	5.940	0.129	0.198	2.226	0.102	0.376	0.102	0.001	0.434	0.035
A303	0.193	0.005	0.076	76.056	17.471	0.400	0.176	4.752	0.058	0.226	0.192	0.004	0.200	0.190
A304	0.250	0.019	0.031	77.444	11.847	0.537	0.304	8.403	0.205	0.401	0.141	0.000	0.326	0.093
A305	0.174	0.006	0.042	55.140	25.370	0.120	0.204	11.248	0.174	0.254	0.132	0.000	6.488	0.647
A306	0.182	0.005	0.063	71.567	13.028	0.310	0.171	13.553	0.105	0.216	0.152	0.003	0.586	0.059
A307	0.918	0.006	0.052	77.673	11.873	0.401	0.224	7.720	0.082	0.311	0.153	0.007	0.478	0.101
A308	0.536	0.008	0.037	56.810	33.263	0.335	0.287	7.764	0.015	0.144	0.147	0.005	0.522	0.128
A309	0.190	0.005	0.061	65.528	0.008	0.053	0.335	11.905	0.182	0.389	0.237	0.000	8.345	0.085
A310	1.096	0.032	0.129	69.378	24.623	0.318	0.298	3.583	0.047	0.211	0.108	0.010	0.132	0.035
A311	0.191	0.003	0.064	65.815	16.857	0.267	0.268	10.743	0.231	0.438	0.155	0.000	4.735	0.233
A312	0.172	0.008	0.060	72.523	8.606	0.611	0.229	6.916	0.255	0.425	0.291	0.005	9.726	0.172
A313	0.079	0.002	0.067	75.181	20.839	0.163	0.170	2.807	0.126	0.250	0.138	0.000	0.139	0.040
A314	0.122	0.002	0.055	69.447	16.035	0.308	0.240	11.987	0.102	0.328	0.176	0.000	1.139	0.060
A315	0.247	0.018	0.052	66.952	15.649	0.375	0.245	14.605	0.079	0.266	0.161	0.000	1.198	0.152
A316	0.338	0.030	0.140	84.278	12.110	0.248	0.139	2.107	0.057	0.179	0.146	0.012	0.132	0.083
A317	0.386	0.008	0.053	81.654	13.923	0.303	0.193	2.799	0.096	0.280	0.105	0.000	0.163	0.037
A318	0.370	0.010	0.050	81.169	10.595	0.273	0.267	5.501	0.113	0.367	0.172	0.000	0.994	0.118
A319	0.138	0.014	0.066	65.362	17.062	0.315	0.232	14.954	0.184	0.356	0.257	0.000	0.975	0.083
A320	0.104	0.000	0.032	67.486	13.003	0.468	0.219	17.405	0.133	0.265	0.187	0.000	0.642	0.056
A321	0.108	0.001	0.039	62.546	3.597	0.951	0.232	20.867	0.097	0.285	0.340	0.000	10.772	0.167
A322	0.717	0.012	0.084	77.691	9.675	0.524	0.212	10.108	0.153	0.249	0.153	0.000	0.253	0.169

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A323	0.083	0.003	0.094	61.012	11.958	0.457	0.361	24.189	0.293	0.512	0.203	0.001	0.719	0.115
A324	1.828	0.000	0.072	71.083	15.775	0.439	0.290	9.344	0.112	0.279	0.176	0.002	0.516	0.085
A325	0.356	0.007	0.054	81.783	10.976	0.322	0.231	5.319	0.121	0.380	0.163	0.000	0.243	0.044
A326	0.369	0.006	0.042	83.231	9.149	0.462	0.243	5.397	0.142	0.431	0.181	0.000	0.290	0.057
A327	0.176	0.003	0.049	87.668	6.552	0.470	0.181	3.894	0.075	0.335	0.179	0.003	0.397	0.017
A328	0.201	0.013	0.060	76.340	7.421	0.560	0.279	13.580	0.228	0.440	0.150	0.000	0.598	0.130
A329	0.144	0.010	0.056	80.526	7.358	0.387	0.248	5.614	0.204	0.408	0.174	0.000	4.752	0.119
A330	7.812	0.008	0.054	73.730	9.296	0.606	0.172	7.400	0.158	0.348	0.198	0.001	0.183	0.034
A331	0.653	0.007	0.149	85.615	9.458	0.168	0.241	2.578	0.127	0.286	0.123	0.000	0.516	0.078
A332	0.521	0.009	0.015	75.165	11.746	0.425	0.314	10.776	0.025	0.183	0.191	0.005	0.510	0.114
A333	0.161	0.005	0.104	75.565	14.794	0.722	0.286	7.327	0.117	0.334	0.231	0.000	0.237	0.118
A334	0.487	0.000	0.040	59.874	11.058	0.261	0.141	19.746	0.088	0.189	0.139	0.000	6.509	1.471
A335	1.123	0.004	0.054	77.431	11.657	0.469	0.288	7.974	0.144	0.301	0.151	0.000	0.224	0.181
A336	0.808	0.016	0.062	83.000	7.684	0.344	0.163	7.165	0.101	0.251	0.090	0.000	0.270	0.045
A337	0.271	0.020	0.077	87.576	8.049	0.297	0.188	2.310	0.133	0.348	0.125	0.000	0.551	0.057
A338	0.371	0.005	0.070	80.392	9.241	0.548	0.231	7.948	0.079	0.236	0.154	0.004	0.667	0.051
A339	0.169	0.013	0.068	82.875	9.359	0.511	0.238	5.554	0.135	0.368	0.174	0.000	0.471	0.066
A340	0.257	0.009	0.073	88.551	7.936	0.272	0.217	1.929	0.088	0.352	0.145	0.000	0.137	0.036
A341	0.218	0.001	0.074	55.443	16.578	0.520	0.167	13.663	0.248	0.221	0.251	0.000	12.519	0.098
A342	2.382	0.000	0.059	70.220	10.050	0.617	0.295	14.442	0.254	0.395	0.141	0.008	0.980	0.156
A343	0.340	0.000	0.083	73.544	16.171	0.353	0.224	7.878	0.194	0.356	0.161	0.004	0.651	0.039

A344	0.141	0.009	0.080	88.977	6.727	0.454	0.121	2.641	0.154	0.294	0.187	0.003	0.157	0.055
A345	0.453	0.042	0.162	62.486	33.104	0.322	0.259	2.201	0.080	0.152	0.073	0.000	0.503	0.164
A346	0.114	0.080	0.065	29.316	61.548	0.279	0.376	7.003	0.089	0.139	0.138	0.000	0.801	0.052
A347	0.148	0.006	0.052	63.662	6.766	0.437	0.261	20.400	0.329	0.446	0.154	0.000	6.994	0.346
A348	0.172	0.000	0.099	66.505	9.858	0.327	0.156	13.373	0.282	0.411	0.168	0.000	8.413	0.237
A349	0.152	0.010	0.078	85.073	10.536	0.365	0.137	2.828	0.080	0.182	0.145	0.000	0.352	0.061
A350	0.541	0.024	0.093	85.082	11.337	0.236	0.179	1.531	0.152	0.277	0.127	0.007	0.371	0.044
A351	0.381	0.000	0.063	80.545	11.227	0.455	0.158	5.945	0.134	0.289	0.159	0.012	0.563	0.069
A352	0.188	0.003	0.088	75.193	13.114	0.430	0.305	9.493	0.170	0.437	0.162	0.004	0.345	0.068
A353	0.285	0.001	0.043	78.207	13.402	0.289	0.207	6.434	0.154	0.305	0.191	0.000	0.456	0.025
A354	0.203	0.004	0.077	76.031	12.508	0.323	0.218	9.300	0.081	0.322	0.168	0.000	0.717	0.047
A355	0.148	0.003	0.088	84.978	11.603	0.164	0.152	1.487	0.155	0.423	0.152	0.000	0.615	0.032
A356	0.131	0.000	0.066	72.016	12.904	0.346	0.252	12.866	0.279	0.583	0.199	0.003	0.239	0.117
A357	0.479	0.000	0.049	65.338	13.017	0.270	0.277	16.721	0.398	0.596	0.203	0.000	2.503	0.150
A358	0.166	0.013	0.082	83.181	11.604	0.368	0.184	3.538	0.185	0.421	0.121	0.006	0.106	0.024
A359	0.413	0.000	0.058	79.656	4.911	0.510	0.138	8.605	0.248	0.285	0.210	0.000	4.860	0.107
A360	0.359	0.008	0.092	78.325	12.211	0.313	0.210	7.361	0.230	0.377	0.142	0.000	0.316	0.055
A361	0.529	0.010	0.042	51.228	16.785	0.400	0.213	19.362	0.263	0.322	0.216	0.018	10.290	0.323
A362	0.343	0.000	0.055	76.972	9.940	0.639	0.314	9.243	0.300	0.491	0.283	0.000	1.268	0.152
A363	0.484	0.001	0.070	59.577	16.662	0.407	0.195	11.752	0.243	0.337	0.168	0.000	9.837	0.266
A364	0.449	0.032	0.160	87.114	9.063	0.197	0.088	2.491	0.085	0.146	0.064	0.007	0.084	0.019
A365	0.113	0.009	0.048	81.841	8.685	0.514	0.221	6.619	0.185	0.373	0.231	0.000	1.125	0.036

Sample	Fe	Co	Ni	Cu	Zn	As	Au	Pb	Bi	Pt	Ag	Pd	Sn	Sb
A366	0.399	0.105	0.132	59.207	18.980	2.237	0.348	13.674	0.385	0.357	0.282	0.000	1.697	2.197
A367	0.305	0.015	0.084	85.263	9.937	0.331	0.204	2.669	0.131	0.309	0.148	0.000	0.518	0.087
A368	0.363	0.000	0.055	69.661	10.809	0.574	0.420	16.086	0.300	0.524	0.138	0.000	0.956	0.115
A369	0.222	0.002	0.079	87.495	7.939	0.283	0.235	2.811	0.143	0.281	0.163	0.000	0.302	0.045
A370	0.212	0.014	0.029	59.054	8.686	0.496	0.269	23.145	0.306	0.466	0.187	0.020	6.872	0.244
A371	6.527	0.009	0.252	73.006	11.633	0.390	0.331	6.362	0.235	0.431	0.235	0.001	0.510	0.077
A372	1.491	0.047	0.169	81.909	11.613	0.220	0.180	3.335	0.172	0.424	0.145	0.000	0.229	0.066
A373	0.202	0.011	0.056	70.755	11.012	0.733	0.292	15.845	0.220	0.361	0.208	0.000	0.233	0.073

REFERENCES

- Allen, R. O., ed. 1989. *Archaeological chemistry IV*. Washington, D.C.: American Chemical Society.
- Beck, C. W., ed. 1974. *Archaeological chemistry*. Washington, D.C.: American Chemical Society.
- Carter, G. F., ed. 1978. *Archaeological chemistry II*. Washington, D.C.: American Chemical Society.
- Carter, G. F. 1997. The chronology of Augustan asses and quadrantes determined from chemical compositions. *American Journal of Numismatics* 7-8: 235-250.
- Gaines, T., E. McGrath, V. Iduma, R. Kuzava, S. Frederick, and M. Benvenuto. 2002. Chemical compositions of Chinese coins of Emperor Ch'ien Lung (Qian Long) and Annamese coins of Emperor Thanh Thai via energy-dispersive X-ray fluorescence. In: K. A. Jakes, ed., *Archaeological chemistry: materials, methods, and meaning*. ACS Symposium Series 831. Washington, D.C.: American Chemical Society.
- Gaines, T., E. McGrath, R. Langrill, and M. Benvenuto. 2001. Chemical compositions of some of the Japanese Kanei-Tsuho coins via energy dispersive X-ray fluorescence. *Numismatic Chronicle* 161: 308-317.
- Greenwood, N. N. and A. Earnshaw. 1984. *Chemistry of the elements*. Oxford: Pergamon Press.
- Hartill, D. 1991. A study of metropolitan coinage of Qian Long. *Numismatic Chronicle* 151: 67-120.
- Kuntz, Mike, Jennifer Ferguson, Vincent Iduma, Renee Kuzava, and Mark Benvenuto. 2002. Chemical compositions of African trade bracelets (manillas) via energy dispersive X-ray fluorescence. *American Journal of Undergraduate Research* 1: 29-38.
- Lambert, J. B., ed. 1984. *Archaeological chemistry III*. Washington, D.C.: American Chemical Society.
- Lockhart, J. H. S. 1975. *The Lockhart collection of Chinese copper coins*. Lawrence, Mass.: Quarterman Publications.
- Lutz, J. and E. Pernicka. 1996. Energy dispersive X-ray fluorescence analysis of ancient copper alloys: empirical values for precision and accuracy. *Archaeometry* 38: 313-323.
- Mabuchi, H., K. Notsu, S. Nishimatsu, K. Fuwa, H. Iyama, and T. Tominaga. 1979. [Chemical composition of ancient coins]. *Nippon Kagaku Kaishi* 5: 586-590.
- Orna, M. V., ed. 1996. *Archaeological chemistry: organic, inorganic, and biochemical analysis*. Washington, D.C.: American Chemical Society.
- Schjøth, F. 1929. *The currency of the Far East*. Publications of the Numismatic Cabinet of the University of Oslo 1. London and Oslo: Luzac and H. Aschehoug.

Street Money: Distribution and Analysis

JULES JANICK* AND JUDITH B. SANTINI

Money found in the street in West Lafayette, Indiana during a ten-year period from 1993 to 2003 was tabulated over twenty-one periods, yielding a total of 8331 units (5987 pennies, 653 nickels, 1178 dimes, 491 quarters, 1 half dollar, 17 dollar bills, 3 five-dollar bills, 1 ten-dollar bill). Distribution of coins over time was heterogeneous; regression analysis indicated a decrease in percentage of pennies and an increase in quarters and dimes, with nickels constant. In the last collection period, the mint dates of coins were determined and the mean coin age was 13.2 years. Street-found pennies represented a random selection of pennies, leaving circulation at a rate of -0.45% per year.

Anyone who has spent time in a modern American city will be familiar with the phenomenon of lost or discarded coins (most commonly pennies) found in the street, a phenomenon that is also strikingly familiar to archaeologists excavating ancient Greco-Roman cities. In recent years numismatists within the archaeological community have struggled to uncover the process and meaning of this type of coin deposition. During the course of the discussion, questions have been raised about whether such deposits represent accidental loss or the purposeful discard of coins that had become worthless for economic or social reasons (Butcher 2001–02). Likewise, there has been some debate over what these deposits may or may not be able to tell us about patterns of circulation and the state of the economy (Reece 1984: 173). The present paper attempts to answer similar questions

* Purdue University, West Lafayette, IN 47907, USA.

regarding modern coin deposits, by statistically analyzing "street money" found in a section of West Lafayette, Indiana, over a ten-year period.

From 23 October 1993 to 25 December 2003, money found in the street by a group of dedicated walkers in West Lafayette was collected for a charity box. The discovery of coins was considered "good luck" so the coins were continuously sought, especially in places where they were most likely to be found, such as parking lots, soft drink dispensers, and other high-traffic areas on a 2-mile route that varied little from day to day. The route passed through a small commercial area called "The Village" consisting of shops, parking lots, and a small strip mall. When the box was considered full, the money was sorted by denomination and donated to a charity; over the ten-year period there were a total of twenty-one collections. At the last collection the dates of the coins were recorded and then compared to ten rolls of pennies (fifty each) obtained from a bank on 31 December 2003.

The distribution of street money by collection period is shown in Table 1. Over the ten-year period there was a total of 8331 finds consisting of 5987 pennies, 2323 cupro-nickel alloy coins (653 nickels, 1178 dimes, 491 quarters, and a single half-dollar), and 21 bills (17 dollars, 3 five-dollar bills, and a single ten-dollar bill). A summary of the total indicates the rarity of the half-dollar coin and the 10-dollar bill as street money, each less than 0.01% of finds as compared to 71.86% pennies. The total value of the money was \$375.57, of which the greatest component was due to quarters (\$122.75), followed by dimes (\$117.80). Interestingly, the value of pennies (\$59.87) was greater than the total value of bills (\$47).

An analysis was made to determine if the distribution pattern of finds was constant over the twenty-one collection periods. Because the occurrence of the half-dollar and bills was so rare, this analysis was confined to pennies, nickels, dimes, and quarters. A chi-square test (Table 2) indicated that the distribution pattern of the twenty-one collections was inconsistent or heterogeneous ($\chi^2 = 197.0$, $P < 0.01$). To determine if this variation was affected by time, the data were plotted using the percentage distribution of each coin class against the mean date of each collection period. Regression was calculated for each of the four coin classes (Fig. 1). These results show a decrease in the percentage of pennies over time, with increasing quarters and dimes, while nickels remained constant. To better follow the changes within the cupro-nickel coin group, a regression analysis was made for the percentage distribution of the nickels, dimes, and quarters over the ten-year period (Fig. 2). There was clearly an increase in the percentage of quarters compensated by a decrease in dimes with nickels remaining fairly constant. Over time the percentage of quarters increased from about 13% of the cupro-nickel coin group to 31%, reflecting either a change in the actual frequency or merely a change in skill for assessing locations where quarters would be more likely to be found, since quarters are the coins of choice for dispensing machines.

TABLE 1. Collection dates, distribution, and value of street money collected over a ten-year period, West Lafayette, Indiana.

Box	Collection time			Number found							
				Coins					Bills		
	Start	Finish	Midpoint	1¢	5¢	10¢	25¢	50¢	\$1	\$5	\$10
1	10/23/93	9/21/94	04/07/94	266	16	42	9				
2	09/22/94	01/25/95	11/01/94	291	31	42	16		1		
3	01/26/95	09/09/95	05/10/95	360	33	53	15			1	
4	09/10/95	12/31/95	11/02/95	198	13	29	12		2		
5	01/01/96	08/06/96	04/15/96	320	41	55	20	1	2	1	
6	08/07/96	10/25/96	09/11/96	200	19	25	6		1		
7	10/26/96	04/11/97	12/13/96	264	31	65	18		5		
8	04/12/97	11/23/97	06/01/97	338	40	62	19			1	
9	11/24/97	03/25/98	12/01/97	268	27	62	20				
10	03/26/98	11/04/98	05/27/98	380	32	74	23				
11	11/05/98	02/24/99	11/09/98	277	31	64	19		1		
12	02/25/99	06/18/99	03/20/99	256	45	56	25				
13	06/19/99	10/02/99	07/25/99	309	22	45	26				
14	10/03/99	03/05/00	12/02/99	348	32	80	32				
15	03/06/00	07/22/00	04/27/00	375	35	57	25		1		1
16	07/23/01	05/05/01	12/06/00	311	53	67	30				
17	05/06/01	11/29/01	08/22/01	321	30	57	24				
18	11/30/01	05/05/02	02/21/02	211	26	66	43		2		
19	05/06/02	11/10/02	08/13/02	245	25	46	33		2		
20	11/11/02	06/06/03	01/26/03	213	42	76	39				
21	06/07/03	12/25/03	09/21/03	236	29	55	37				
Total (grand total = 8331)				5987	653	1178	491	1	17	3	1
Distribution (%)				71.86	7.84	14.14	5.89	0.01	0.20	0.04	0.01
Value (\$) (grand total = 375.57)				59.87	32.65	117.80	122.75	0.50	17.00	15.00	10.00

TABLE 2. Distribution of pennies, nickels, dimes, and quarters from 21 collection boxes over a ten-year period, $\chi^2 = 197.0$ (df = 60, $P < 0.01$).

Box	Number of coins								Total
	Penny		Nickel		Dime		Quarter		
	Found	Expected	Found	Expected	Found	Expected	Found	Expected	
1	266	240.0	16	26.2	42	47.2	9	19.7	333
2	291	273.8	31	29.9	42	53.9	16	22.4	380
3	360	332.2	33	36.2	53	65.4	15	27.2	461
4	198	181.6	13	19.8	29	35.7	12	14.9	252
5	320	314.2	41	34.3	55	61.8	20	25.8	436
6	200	180.1	19	19.6	25	35.4	6	14.8	250
7	264	272.4	31	29.7	65	53.6	18	22.3	378
8	338	330.7	40	36.1	62	65.1	19	27.1	459
9	268	271.6	27	29.6	62	53.4	20	22.3	377
10	380	366.8	32	40.0	74	72.1	23	30.1	509
11	277	281.7	31	30.7	64	55.4	19	23.1	391
12	256	275.2	45	30.0	56	54.2	25	22.6	382
13	309	289.7	22	31.6	45	57.0	26	23.8	402
14	348	354.5	32	38.7	80	69.8	32	29.1	492
15	375	354.5	35	38.7	57	69.8	25	29.1	492
16	311	332.2	53	36.2	67	65.4	30	27.2	461
17	321	311.3	30	34.0	57	61.2	24	25.5	432
18	211	249.3	26	27.2	66	49.0	43	20.4	346
19	245	251.5	25	27.4	46	49.5	33	20.6	349
20	213	266.6	42	29.1	76	52.4	39	21.9	370
21	236	257.2	29	28.0	55	50.6	37	21.1	357
Total	5987		653		1178		491		8309

At the end of the ten-year period, the dates of all coins in the last charity box were determined. In a very few cases the dates could not be read; street coins are notoriously defaced by traffic and the environment. For purposes of comparison ten rolls of bank pennies were used as a sample to represent the entire circulating penny population. In each of the ten rolls some new (2003) coins were found, confirming they were recently brought into the bank by customers. Thus, the data from the ten rolls were combined and presented in Table 3.

The mint dates of the 232 street pennies ranged from 1960 to 2003, with only four years missing; nickels ranged from 1959 to 2002, dimes from 1966 to 2003,

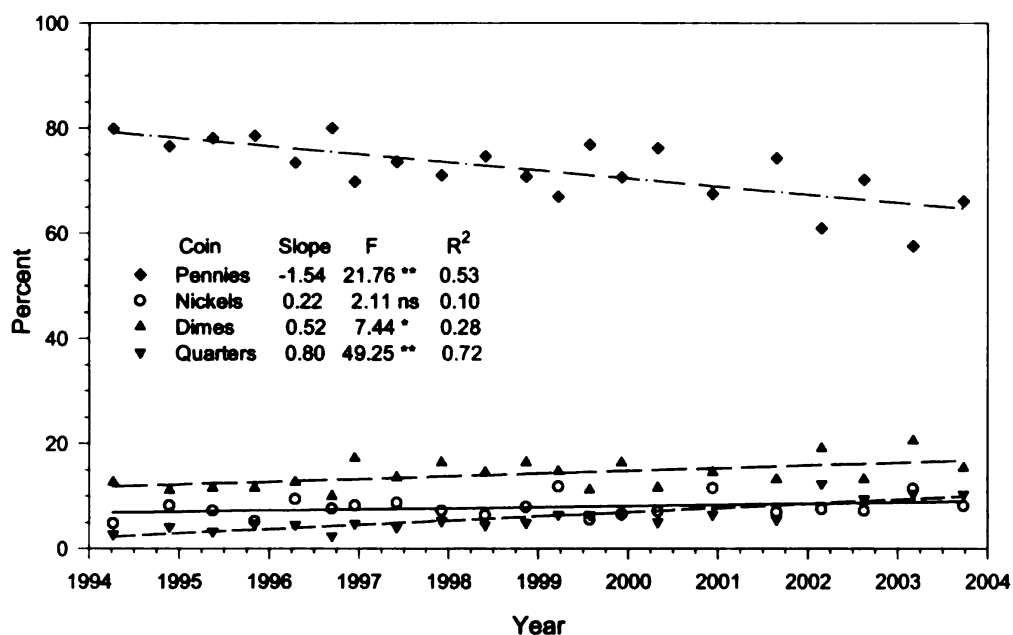


FIGURE 1. Regression of percent distribution of coins on collection date. Significance is indicated by * or ** ($P < 0.05$ or $P < 0.01$, respectively).

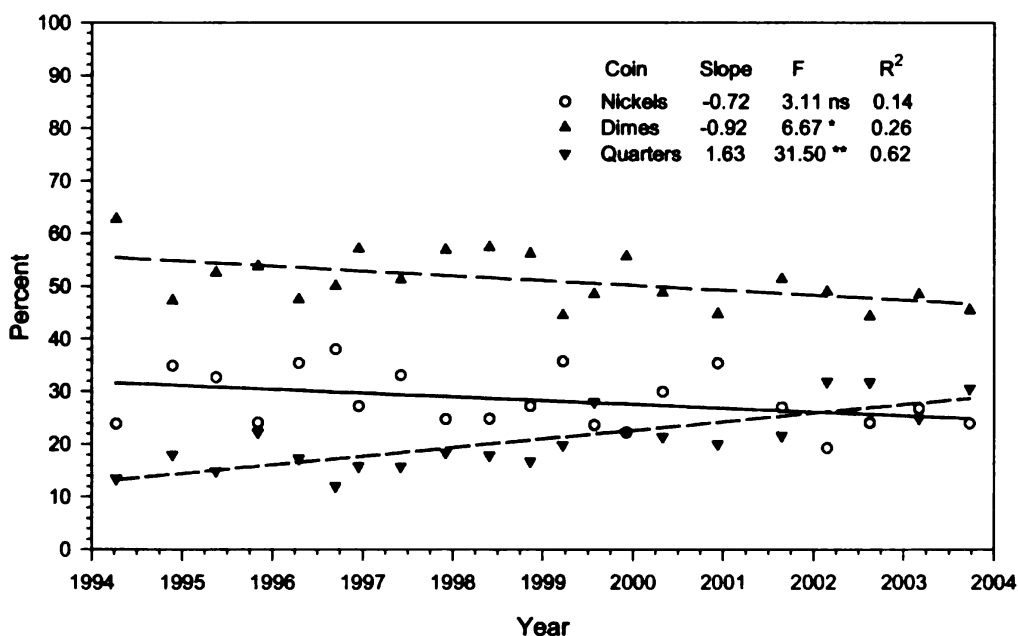


FIGURE 2. Regression of percent distribution of cupro-nickel coins on collection date. Significance is indicated by * or ** ($P < 0.05$ or $P < 0.01$, respectively).

TABLE 3. Distribution of mint year of bank pennies from ten rolls obtained 31 December 2003 and street coins collected 16 June to 25 December 2003.

Year	No. of coins					
	Bank Penny	Street				Total
		Penny	Nickel	Dime	Quarter	
2003	27	26		1	3	30
2002	16	7	1	7	2	17
2001	21	6	2	4	1	13
2000	50	21	2	4	4	31
1999	16	8	2	3	1	14
1998	23	13	1	2	1	17
1997	11	10		4		14
1996	13	11	2	2		15
1995	19	11	3	4	2	20
1994	13	8	1	2	2	13
1993	17	5	1	1	2	9
1992	11	3		2	1	6
1991	17	2	1		2	5
1990	12	4	1	2	1	8
1989	11	2		1	1	4
1988	9	3	1	3		7
1987	7	5				5
1986	13	5				5
1985	9	3	1	1	2	7
1984	11	2	2	2	1	7
1983	15	8		1		9
1982	22	3			1	4
1981	14	14	1	1		16
1980	11	5		1	1	7
1979	9	4			3	7
1978	7	2				2
1977	7	2				2
1976	11	5				5
1975	6	4		1		5
1974	8	6	2	1	1	10

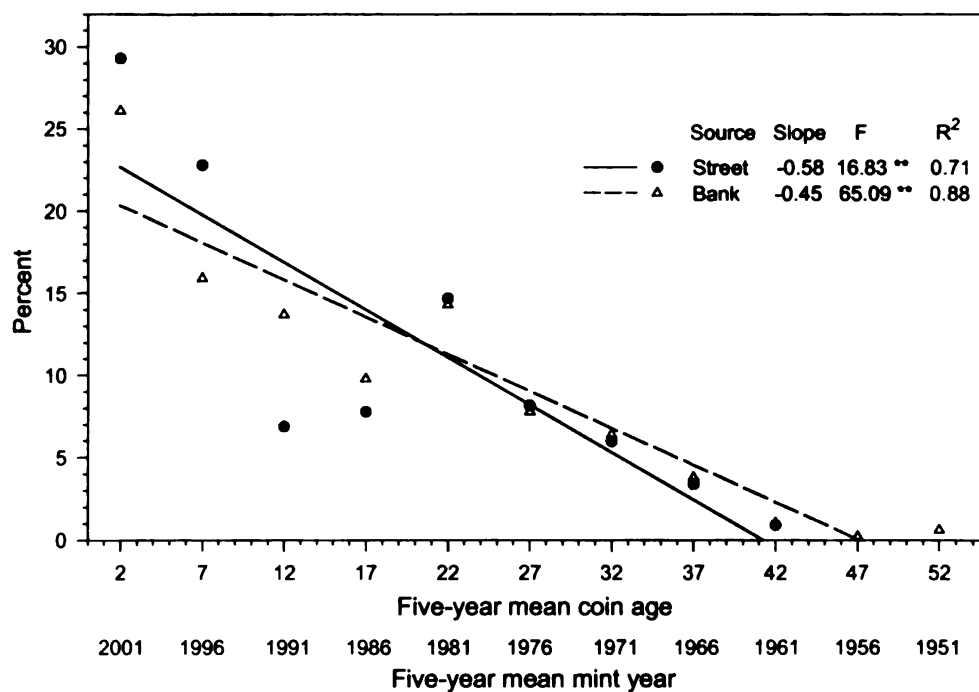
1973	5	7	1			8
1972	1	3				3
1971	4	1			1	2
1970	11			1		1
1969	11	3				3
1968	3	2		1		3
1967	3	1		2	2	5
1966	4	1		1	1	3
1965	2				2	2
1964	7	4	3			7
1963	2					0
1962	0	1				1
1961	1					0
1960	1	1				1
1959	1		1			1
1957	1					
1953	3					
1946	1					
1909	1					
Total	498	232	29	55	38	354
Mean						
coin age	14.8	13.1	15.4	11.1	14.7	13.2
Median						
mint year	1991	1994	1993	1995	1991	1994

and quarters from 1965 to 2003. The lack of pre-1965 dimes and quarters is explained by the fact that the mint ceased to use silver for these denominations in 1965, replacing it with a cupro-nickel alloy. Thus, the earlier issues were removed from circulation because their bullion value exceeded their face value. The median mint years were extremely close, ranging from 1991 for quarters to 1995 for dimes. The average age of street pennies was 13.1 years, as compared to 14.8 for the 498 bank pennies (two could not be read). The data confirmed the expected decay in frequency of appearance as coins age. These results indicate the average life of coins in circulation is about thirteen years.

An examination of the ages of both street and bank coins (Table 3) suggests that there may be differences in the amount of coins put into circulation annually, since the decline in frequency from year to year seems nonrandom (the plot is wavy). For example, in both street and bank pennies there seem to be peaks in

TABLE 4. Distribution of coin age in five-year intervals from 2003 to 1909 in bank and street pennies, $\chi^2 = 14.9$, $df = 9$, n.s.

Median Year	Number of Coins				Total
	Bank		Street		
	Found	Expected	Found	Expected	
2001	130	135.1	68	62.9	198
1996	79	90.0	53	42.0	132
1991	68	57.3	16	26.7	84
1986	49	45.7	18	21.3	67
1981	71	71.6	34	33.4	105
1976	39	39.6	19	18.4	58
1971	32	31.4	14	14.6	46
1966	19	18.4	8	8.6	27
1961	5	4.8	2	2.2	7
1911– 1956	6	4.1	0	1.9	6
Total	498		232		730

FIGURE 3. Regression of percent distribution of coins on age for street and bank penny collections, 2003. Significance is indicated by ** ($P < 0.01$).

2003, 2000, 1998, and 1995, a pattern that suggests an increased number of these pennies in the Lafayette area.

An analysis of the rate of decay over time for street and bank pennies was made by combining the coin data into five-year intervals, with 2003-minted coins having a coin age of 0, 2002 having an age of 1, and so on. Chi-square analysis (Table 4) indicated homogeneity of the data patterns. Regression of the percentage distribution on coin age (a more descriptive statistic) was performed to quantify the rates of decay (Fig. 3). Coins older than fifty years were considered extremely rare and were omitted from the regression. The rate of decay was linear for both street and bank pennies with no significant improvement of fit by considering the addition of a quadratic term. The rates of decay for street and bank pennies (−0.58% and −0.45%, respectively) are not different, with a combined rate of decay of −0.49% per year. It is interesting to note the greater percentage of street pennies in the 2001 and 1996 groups and the higher percentage of bank pennies in the 1991 and 1986 groups. Also, the 498 bank pennies contained a 1946 penny (57 years old) and a 1909 penny (94 years old!), while the oldest street penny was 1960 (43 years old). This may indicate that the group of bank pennies contained more hoarded coins.

What can be concluded from this ten-year study of coins found in the street? The age distribution suggests that the street pennies represent a random selection of coins in circulation. Clearly, pennies seem to be lost or discarded without reference to their age. Newly minted pennies (in this case 2003 dates) are easy to observe because of their sheen and luster; however, they were found disproportionately among street coins ($\chi^2 = 6.10$, $P < 0.05$, data not shown). Another obvious observation is that coins are carelessly handled by the American public. The high frequency of street pennies suggests that many individuals do not bother picking them up when dropped. However, in one case as many as twenty-seven were found in a single location, indicating that they were simply thrown away, a reflection of their low value and low esteem. The relative consistency of cupro-nickel coin finds might imply that all small change has become devalued in the mind of the American public. The early immigrants to this country were told that America was the land of opportunity with the streets paved in gold. They seem to have been right on both counts.

REFERENCES

- Butcher, K. 2001–02. Small change in ancient Beirut. *Berytus* 45–46: 32–41.
- Reece, R. 1984. Coins. In: H. R. Hurst and S. P. Roskams, *Excavations at Carthage: the British Mission*, vol. 1, part 1, pp. 171–181. Sheffield: University of Sheffield Department of Archaeology and Prehistory for the British Academy.

Acquisitions for 2003 and 2004 in the American Numismatic Society Collection

PLATES 37–48

MICHAEL L. BATES, SEBASTIAN HEATH,
ROBERT WILSON HOGE, ELENA STOLYARIK, AND PETER G. VAN ALFEN

GREEK

In 2003 and 2004 the Greek department grew by a total of 259 coins, the bulk of which we received in two substantial donations. ANS Trustee Dr. James Schwartz donated a wide-ranging collection of 141 coins (accession numbers 2004.14.1–141), which includes a large number of Celtic pieces and fractional silver from the Classical period, and Trustee Dr. Arnold-Peter Weiss donated 96 coins in three gifts (acc. nos. 2003.7.1–83; 2004.16.1–6; 2004.18.1–7), 81 of which are Lycian coins of various dynasts. We thank our two Trustees for their gifts, and extend our gratitude to our other benefactors as well, Dr. Jack Balcer (acc. nos. 2004.13.1–8), Antoinette Bosco (acc. no. 2004.32.1), Oliver Hoover (acc. no. 2003.10.1), Jonathan Kagan (acc. nos. 2003.38.1–3), Wayne Sayles (acc. no. 2003.25.1), and David Vagi (acc. nos. 2004.12.1–3; 2004.28.1).

Because the wide range and number of donations makes listing them individually impractical, only a selection of the donations are listed and discussed below. For those interested in reviewing a complete catalogue of the 2003–2004 acquisitions, please visit our website (<http://www.numismatics.org>), where you can use the accession numbers provided above to access the coin records and, in some cases, a photograph.

Lucania

1. Metapontum, c. 220–207
 Acc. number 2004.12.2 (gift of David Vagi)
 AR diobol, 12 mm, 1.09 g, 6:00
Obv.: Head of Demeter r.
Rev.: Ear of barley; F in r. field; META
Ref.: SNG ANS, part 1, nos. 525–527.

Sicily

2. Leontini, c. 460
 Acc. number 2004.16.4 (gift of Dr. Arnold-Peter Weiss)
 AR tetradrachm, 25 mm, 17.23 g, 12:00
Obv.: Quadriga walking r. guided by charioteer in long chiton; above, Nike flying r. to crown horses; in exergue: lion outstretched to r.
Rev.: Laureate female to r. surrounding by four barleycorns; VEONTINON (partially retrograde)
Ref.: Boehringer (1998), pl. 11, nos. 26–27

Macedonia

3. Acanthus, c. 430–390
 Acc. number 2004.16.6 (gift of Dr. Arnold-Peter Weiss)
 AR tetradrachm, 30 mm, 16.82 g
Obv.: Lion to r. on bull to l.
Rev.: Four-part incuse square, raised surface within each square; all within incuse square; AKANΘION
Ref.: SNG ANS, part 7, nos. 12–15

Thrace

4. Abdera, c. 492–470
 Acc. number 2004.18.1 (gift of Dr. Arnold-Peter Weiss)
 AR tetradrachm, 31 mm, 14.21 g
Obv.: Griffin seat l. with foreleg raised, beneath which a facing pot-bellied satyr dancing with head turned to l.; Σ MOP
Rev.: Quadripartite incuse square
Ref.: May (1966), no. 108

Thessaly

5. Heraclea-Trachinina, c. 426–344
 Acc. number 2004.14.41 (gift of James Schwartz)
 AR obol, 10 mm, 1.11 g, 3:00
Obv.: Head of lion to l.

Rev.: Herakles' club, two ivy leaves with stalks intertwined; HPA
Ref.: *SNG Copenhagen*, part 3, no. 67

6. Alexander of Pherae, c. 369–358
 Acc. number 2004.12.3 (gift of David Vagi)
 AR obol, 12 mm, 0.85 g
Obv.: Bipennis
Rev.: Four-spoke wheel; around: A ΛE
Ref.: *Cp. SNG Copenhagen*, part 3, no. 244

Ionia

7. Teos, c. 540–478
 Acc. number 2004.13.2 (gift of Jack Balcer)
 AR tritemorion, 7 mm, 0.29 g
Obv.: Griffin seated to r., symbol lower r. field
Rev.: Quadripartite incuse square
Ref.: Balcer (1968), no. 70 (this coin)

8. Teos, c. 540–478
 Acc. number 2004.13.3 (gift of Jack Balcer)
 AR tritemorion, 7 mm, 0.32 g
Obv.: Griffin seated to r.
Rev.: Quadripartite incuse square
Ref.: Balcer (1968), no. 71 (this coin)

9. Teos, c. 540–478
 Acc. number 2004.13.1 (gift of Jack Balcer)
 AR tetramorion, 5 mm, 0.24 g
Obv.: Griffin seated to r.
Rev.: Quadripartite incuse square
Ref.: Balcer (1968), no. 73

Cyclades

10. Carthaea, late sixth century
 Acc. number 2004.18.5 (gift of Dr. Arnold-Peter Weiss)
 AR stater, 20 mm, 13.20 g
Obv.: Amphora; two cuts
Rev.: Incuse pattern; one cut
Ref.: *Cp. SNG Copenhagen*, part 3, no. 628
11. Delos, c. 530–520
 Acc. number 2004.18.4 (gift of Dr. Arnold-Peter Weiss)
 AR didrachm, 22 mm, 8.50 g
Obv.: Seven-string lyre; cut

Rev.: Rough incuse

Ref.: Hackens (1973), nos. 1–2

Caria

12. Knidos, c. 520–495

Acc. number 2004.18.2 (gift of Dr. Arnold-Peter Weiss)

AR stater, 21 mm, 11.82 g

Obv.: Lion head to r.

Rev.: Head of Aphrodite to r. within incuse square

Ref.: Cahn (1970), no. 24

13. Kaunos, late fifth century

Acc. number 2003.38.2 (gift of Jonathan Kagan)

AR hemidrachm, 12 mm, 2.49 g, 2:00

Obv.: Iris with curved wings in running-kneeling position to r.

Rev.: Standing griffin to r. with foreleg raised within incuse square with dot border

Ref.: *SNG Kayhan*, no. 798

14. Uncertain mint, fifth century

Acc. number 2003.38.1 (gift of Jonathan Kagan)

AR stater, 21 mm, 11.74 g, 1:00

Obv.: Winged figure in running-kneeling position to r.

Rev.: Lion to l. with raised foreleg and head reverted within incuse square with dot border; Carian characters Φ M I 8

Ref.: *SNG Kayhan*, no. 977

Lycia

15. Protodynastic, c. 500

Acc. number 2004.12.1 (gift of David Vagi)

AR stater, 19 mm, 9.09 g, 2:00

Obv.: Head of boar to l.

Rev.: Head of lion to l. within incuse square

Ref.: Vismara (1989), pl. 5, no. 39

16. Tathivaibi, c. 480–460

Acc. number 2003.38.3 (gift of Jonathan Kagan)

AR tetrobol, 11 mm, 2.72 g

Obv.: Facing head of Silenos

Rev.: Tetraskes; Lycian inscription $\Xi\theta$ $\Xi\alpha$ η $\Xi\chi$ $\chi\alpha\tau$ around; the whole in dotted incuse square

Ref.: *BMC Lycia*, pl. 5, no. 6

17. Phaselis, c. 550–530

Acc. number 2004.16.1 (gift of Dr. Arnold-Peter Weiss)

AR stater, 19 mm, 10.99 g

Obv.: Boar-shaped ship prow to r.

Rev.: Rhomboid incuse

18. Phaselis, c. 550–530

Acc. number 2004.16.2 (gift of Dr. Arnold-Peter Weiss)

AR stater, 19 mm, 10.95 g

Obv.: Boar-shaped ship prow to l.

Rev.: Rhomboid incuse

19. Phaselis, c. 550–530

Acc. number 2004.16.3 (gift of Dr. Arnold-Peter Weiss)

AR stater, 19 mm, 10.92 g

Obv.: Boar-shaped ship prow to r.

Rev.: Rhomboid incuse

These three coins are reportedly from the same hoard that produced two other recently donated early Phaselian staters (van Alfen 2001: nos. 33–34). Like the other two, these coins are of a type not known to Heipp-Tamer when she published her 1993 study.

*Cilicia***20. Datames, 378–372**

Acc. number 2004.14.68 (gift of James Schwartz)

AR stater, 20 mm, 10.87 g, 7:00

Obv.: Female head slightly facing to l.

Rev.: Head of Ares r. in crested Athenian helmet; to r. 𐤀𐤓𐤕𐤌; countermark, bull walking r.; above 𐤋𐤎𐤏.

Ref.: *SNG Copenhagen*, part 6, no. 292; countermark: *SNG Copenhagen*, part 6, no. 299

*Cyprus***21. Uncertain mint**

Acc. number 2004.18.6 (gift of Dr. Arnold-Peter Weiss)

AR stater, 25 mm, 11.05 g, 3:00

Obv.: Head of roaring lion to l.

Rev.: Octopus; 𐤀 (ka), all within square incuse

Ref.: Price and Waggoner (1975), no. 817 (this coin); van Alfen (2004)

PETER G. VAN ALFEN

ROMAN AND BYZANTINE

In 2003 and 2004, the Roman and Byzantine collection was enlarged by numerous gifts from our members. Some of these donations will be described in more detail below. Among the most interesting accessions in the Roman collection is a gift of six dupondii and five asses of Antoninus Pius and an as of Marcus Aurelius. These very important coins, some of which are rare and not listed in *RIC*, have been heretofore lacking in our trays. They were generously selected for the ANS collection by Jack Benedict. An unusual example of a quarter part of a rare aureus of the emperor Maximianus (corresponding in weight to a post-reform tremissis) was kindly donated by Thomas Tesoriero, our long-term member and donor. Albert Zaloom donated two imitative pieces: a Vespasian sesterius and a Byzantine follis with types of Justinian I. Mrs. Antoinette Bosco donated a sesterius of Trajan and a scarce denarius of Julia Paula, struck at an eastern mint. Some of the most colorful and generous donations came from ANS Trustee Dr. James Schwartz. This important selection of 111 examples represents Julius Caesar, Sextus Pompey, Augustus, Tiberius, Nero, Vespasian, Titus, Domitian, Nerva, Trajan, Hadrian, Antoninus Pius and Faustina, Commodus, and Julia Domna. This gift also includes numerous silver denarii and antoniniani struck by the emperors of the third century AD, the coinage of the Tetrarchy and the Constantinian dynasty, as well as different variations of late Roman bronzes, along with an early Byzantine issue of Anastasius I's half-follis. The majority of our new acquisitions have parallels in major publications, but all of them are of great historical interest. These new acquisitions will be an important addition to the Roman collection and of great research interest to scholars and collectors. We are grateful to all of our donors, mentioned above, for their important contributions.

*Roman***22. Sextus Pompey, 42–38 BC, Spain**

Acc. number: 2004.14.72 (gift of James Schwartz)

AR denarius, 27 mm, 3.46 g

Obv.: Head of Pompey r., between jug and lituus

Rev.: Brockage of obv.

Ref.: *BMCR* Sicily 93; Sydenham 1344–1345; Crawford 511/3a

This is the second brockage of Sextus Pompey's type in the ANS collection, but this new specimen is in somewhat better condition.

***23. Sextus Pompey, c. 43 BC, uncertain Sicilian mint (Plate 39)**

Acc. number: 2004.14.73 (gift of James Schwartz)

AE as, 28 mm, 13.30 g, 6:00

Obv.: Janus head laureate; above, MAGN

Rev.: Prow of galley r.; PI[VS] above, [IMP] below

Ref.: RPC 671; Crawford 479.1; Sydenham 1044; BMCRR Spain 95.

This type has been traditionally assigned to Spain during the period 45–44 BC, but in fact, this particular issue is more likely to have been struck in Sicily after Sextus Pompey's arrival in 43 BC. Coins of this type have been found in notable quantities in excavations in Sicily (Buttrey 1989). The considerable variation in this issue suggests that several mints were involved in its production. Our example, according to Rodolfo Martini's studies, belongs to the last group (group C) of poor style and struck at an uncertain Sicilian mint (Martini 1988: 112–118).

- *24. Nero, AD 63/4–64/5, commemorative coinage of Divus Claudius, Caesarea in Cappadocia (Plate 39)**

Acc. number: 2004.14.84 (gift of James Schwartz)

AR drachm, 18 mm, 3.64 g, 12:00

Obv.: Head of Nero laureate r.; NERO CLAVD DIVI CLAVD F CAESAR AVG GER[MA..]

Rev.: Head of Claudius laureate r.; DIVOS CLAVD AVGVST GERMANIC PATER AVG

Ref.: RIC 622; RPC 3648; BMC 420

This is one of the scarce issues which were struck probably during the tenth and eleventh Neronian regnal years in connection with the invasion of Armenia. The new acquisition is the second example in the ANS collection, produced by different dies.

- 25. Vespasian, AD 69–79, Caesarea in Cappadocia**

Acc. number: 2004.14.95 (gift of James Schwartz)

AR didrachm, 19 mm, 7.24 g, 12:00

Obv.: Head of Vespasian laureate r.; ΑΥΤΟΚΡΑ ΚΑΙΣΑΡ ΟΥΕΣΠΑΙΑΝΟC CEBACTOC

Rev.: Head of Titus laureate r.; ΑΥΤΟ ΚΑΙ ΟΥΕCΡΠΙΑΙΑΝΟC CEBACTOY YIOS

Ref.: Sydenham 102; Metcalf 4; BMC 19

This issue is a new type in the ANS collection.

- *26. Hadrian, AD 125–128, Rome (Plate 39)**

Acc. number: 2004.14.120 (gift of James Schwartz)

AE quadrans, 18 mm, 4.48 g, 6:00

Obv.: Head of Hadrian laureate r.; HADRIANVS AVGVSTV

Rev.: Lyre; COS III S C

Ref.: BMC 1359; RIC 688; C 433

This scarce example, with an extremely fine portrait, is a much better-preserved piece than the one already in the collection.

27. Antoninus Pius, AD 139, Rome

Acc. number: 2004.14.123 (gift of James Schwartz)

AR denarius, 17 mm, 3.21 g, 6:00

Obv.: Head of Antoninus Pius laureate, r.; IMP·T·AEL·CAES·HADR·ANTONINVS

Rev.: Emblems of priesthood: from l. to r., aspergillum, jug, lituus, and simpulum; AVG PIVS P M TR P COS II

Ref.: BMC 69; C 94; RIC 28c

This is a common type, but the variety of this issue is new to the ANS collection.

***28. Antoninus Pius, AD 155–156, Rome (Plate 39)**

Acc. number: 2003.15.1 (gift of Jack Benedict)

AE dupondius, 26 mm, 13.02 g, 6:00

Obv.: Radiate head to r.; ANTONINVS·AVG·PIVS·P·P·[...]

Rev.: Jupiter seated l. holding Victory and spear; [TR·] POT·XIX COS[IIII] S C

This is a rare coin, which is not listed in *RIC*. It is also a new type in the ANS collection.

***29. Antoninus Pius, AD 155–156, Rome (Plate 39)**

Acc. number: 2003.15.2 (gift of Jack Benedict)

AE dupondius, 25 mm, 11.78 g, 12:00

Obv.: Radiate head to r.; ANTONINVS[AVG·PIVS·]P·P·IMP·II

Rev.: Vesta seated l. holding palladium and spear; TR POT XIX COS IIII SC

Not listed in *RIC*, this new ANS coin may be the second recorded example of its issue. The reverse type is known for a sestertius (*RIC* 941)

***30. Antoninus Pius, AD 155–156, Rome (Plate 39)**

Acc. number: 2003.15.3 (gift of Jack Benedict)

AE dupondius 26 mm, 12.84 g, 11: 00

Obv.: Radiate head to r.; ANTONINVS AVG·PIVS·P·P·TR·P·XIX

Rev.: Pax standing l. holding branch and cornucopiae; COS IIII

This is another rare coin, which is not listed in *RIC*. The same reverse type was used for the as denomination (*RIC* 955). This issue is a new type in the ANS collection.

***31. Antoninus Pius, AD 155–156, Rome (Plate 39)**

Acc. number: 2003.15.4 (gift of Jack Benedict)

AE dupondius, 24 mm, 10.72 g, 12:00

Obv.: Radiate head to r.; ANTONINVS AVG PIVS [PP...]

Rev.: Inscription within wreath; TR POT / XIX / COS IIII / S C

Ref.: Strack 1127

This dupondius is rare and not listed in *RIC*. The reverse type was used with another denomination (an as, *RIC* 958). This type is new to the ANS collection.

*32. Antoninus Pius, AD 155–156, Rome (Plate 39)

Acc. number: 2003.15.5 (gift of Jack Benedict)

AE dupondius, 24 mm, 10.46 g, 6:00

Obv.: Radiate head to r.; ANTONINVS AVG PIVS P P IMP [II]

Rev.: Annona seated r. holding cornucopiae in both hands; at feet, modius;
TR POT XIX COS IIII S C

Ref.: Strack 1120

This rare dupondius was found in East Anglia, UK. The issue is not listed in *RIC* and was lacking from our collection. An identical reverse type was used for asses (*RIC* 956).

33. Antoninus Pius, AD 155–156, Rome

Acc. number: 2003.15.6 (gift of Jack Benedict)

AE as, 27 mm, 7.90 g, 6:00

Obv.: Laureate head r.; ANTONINVS AVG·PIVS·P·P·IMP·II

Rev.: Pax standing l. holding branch and cornucopiae; TR POT XIX COS IIII
S C

This rare coin, unlisted in *RIC*, is a combination of two types (*obv.* *RIC* 956, an as, and *rev.* *RIC* 952, a dupondius). This is a new type in our collection.

*34. Antoninus Pius, AD 155–156, Rome (Plate 39)

Acc. number: 2003.15.7 (gift of Jack Benedict)

AE as, 27 mm, 12.55 g, 6:00

Obv.: Laureate head r.; ANTONINVS AVG·PIVS·P·P·IMP·II

Rev.: Fides standing l. holding two standards; TR POT XIX COS IIII S C

This *rev.* type used for the as is not listed in *RIC*, but it appears on a scarce issue of dupondii (*RIC* 951; C 990). This possibly unique example is new to the ANS collection.

35. Antoninus Pius, AD 153–154, Rome

Acc. number: 2003.27.1 (gift of Jack Benedict)

AE dupondius, 26 mm, 13.04 g, 5:00

Obv.: Radiate head r.; ANTONINVS AVG PIVS P P TR XVII

Rev.: Libertas standing r. holding pileus and extending r. hand; LIBERTAS
COS IIII S C

Ref.: *RIC* 920

This is a common coin, but a new type in our collection.

36. Antoninus Pius, AD 155–156, Rome

Acc. number: 2003.27.2 (gift of Jack Benedict)

AE as, 26 mm, 12.77 g, 6:00

Obv.: Laureate head r.; ANTONINVS AVG PIVS P P TR P XIX

Rev.: Jupiter seated l. holding victory and scepter; COS IIII S C

Ref.: RIC 954a

New type in the ANS collection.

37. Antoninus Pius, AD 155–156, Rome

Acc. number: 2003.27.3 (gift of Jack Benedict)

AE as, 24 mm, 9.55 g, 12:00

Obv.: Laureate head r.; ANTONINVS AVG PIVS P P IMP II

Rev.: Providentia standing l., pointing at globe with r. hand, scepter in l. hand; TR POT XIX COS IIII S C

Ref.: RIC 957

New type in the ANS collection.

38. Antoninus Pius, AD 155–156, Rome

Acc. number: 2003.27.4 (gift of Jack Benedict)

AE as, 24 mm, 7.94 g, 6:00

Obv.: Laureate head r.; ANTONINVS AVG PIVS P P IMP II

Rev.: Inscription in wreath; TR POT XIX COS IIII S C

Ref.: RIC 958

This is a relatively scarce coin and is a new type in our collection.

***39. Marcus Aurelius under Antoninus Pius, AD 155–156, Rome (Plate 39)**

Acc. number: 2003.27.5 (gift of Jack Benedict)

AE as, 25 mm, 10.22 g, 12:00

Obv.: Bare head l.; AVRELIVS CAESAR AVG [PII FIL]

Rev.: Securitas (Minerva?) seated r. on throne, lifting r. hand up to head and holding spear; TR POT X COS II/SC

Ref.: BMC 2011; RIC 1331 (var.)

This rare issue was lacking from our collection.

***40. Faustina I, AD 141, Rome (Plate 39)**

Acc. number: 2004.14.126 (gift of James Schwartz)

AE sestertius, 33 mm, 24.54 g, 12:00

Obv.: Head of Faustina to r.; DIVA FAVSTINA

Rev.: Ceres standing l., holding short torch and grain ears; AVGVSTA S·C·

Ref.: BMC 1514; C 88; RIC 1118

This common coin of a posthumous issue of Antoninus Pius' wife is an important new type in the ANS collection for this period.

41. Julia Maesa, AD 218–223, Rome

Acc. number: 2004.14.147 (gift of James Schwartz)

Silver-plated denarius, 19 mm, 3.04 g, 6:00

Obv.: Bust draped r.; IVLIA MAESA AVG

Rev.: Pudicitia seated l. on throne holding scepter; PVDICITIA

Ref.: *BMC* 76; *RIC* 419

This coin of a common type joins our collections of plated coins of the Roman period.

***42. Carausius, AD 286–293 (Plate 39)**

Acc. number: 2004.14.178 (gift of James Schwartz)

AE antoninianus, 18 mm, 2.31 g, 8:00

Obv.: Radiate and draped bust of the emperor r.; IMP CAR[AVSIVS P AV...]

Rev.: Victory walking r., holding wreath and palm; [VICTOR]IA AVG

The reverse is damaged and the mint mark unclear, but this is a rare coin from Londinium (*RIC* 174–175) or Camulodunum (*RIC* 424) and is a new type in our collection.

***43. Maximianus, AD 288, Rome (Plate 39)**

Acc. number: 2003.24.1 (gift of Thomas Tesoriero)

AV quarter aureus (tremissis), 19 mm, 1.62 g, 6:00

Obv.: Laureate head r.; [MAXIMIANVS] AVGVSTVS

Rev.: Emperor riding horse, r. hand raised; [COS] II

This very unusual coin, new to our collection, is one fourth of an aureus of Maximianus (*RIC* 488), which was struck at the time of his second consulate. It was probably used later as a golden fraction corresponding to the tremissis after the Constantinian reform.

*Byzantine***44. Anastasius I, AD 498–518, Nicomedia**

Acc. number: 2004.14.215 (gift of James Schwartz)

AE half-follis, 19 mm, 2.41 g, 7:0

Obv.: Diademed, draped, and cuirassed bust of Anastasius I to r.; DN ANASTASIVS PP AVG

Rev.: Large K; to l., cross between N and I

Ref.: *DO* 31.2; *BMC* 63; *T* 54-5

This is a small-module post-reform half-follis of Anastasius. This new acquisition is a better-preserved example than the one already in the collection.

ELENA STOLYARIK

ROMAN PROVINCIAL

The most substantial donation of Roman provincial coins to occur in 2003 and 2004 consists of the 34 specimens given by Professor James Schwartz in 2004. Five of these are of types new to the ANS, and these coins are listed individually (nos. 47, 48, 49, 50, 51). In 2003, Wayne Sayles added to the substantial number of Anazarbus pieces he donated in 2001 by giving the Society an important AE31 of Tranquillina, wife of Gordian III (no. 52). Finally, an anonymous donor gave a rare AE19 of Poimanenon in Mysia (no. 46) and a possibly unpublished AE14 of Nicaea in Bithynia (no. 45).

Bithynia

45. Nicaea, Geta Caesar, 209–211

Acc. number: 2003.26.3 (anonymous gift)

AE, 14 mm, 2.73 g, 6:00

Obv.: Head bare r.; ΓΕΤΑΚΑΙCΑΡ

Rev.: Dionysus on panther holding thyrsus and cantharos; ΝΙΚΑΙΕΩΝ

Nicaea frequently issued coins of very small denomination. In the Severan period these were produced for various members of the imperial family and often bore reverse types relating to the iconography of the gods Heracles and Dionysus (cf. *RGA* 1.3, pp. 439–478). For Geta as Caesar in particular, Nicaea issued coins with the infant Dionysus (*RGA* 509), a cista mystica (*RGA* 510), and an elephant (*RGA* 516) on their reverses. While no other examples of the Dionysus-on-panther type are known to the author, this new ANS specimen nicely complements the other motifs found in the series.

Mysia

46. Poimanenon, Faustina Junior, 161–175

Acc. number: 2003.26.1 (anonymous gift via purchase from Edward J. Waddell, Ltd.)

AE, 20 mm, 4.51 g, 6:00

Obv.: Bust r.; C. BACTH ΦΑΥCΤ..

Rev.: Goddess standing l., holding patera over altar in r. hand and cornucopiae in l. hand; ΠΟΙΜΑΝΗΝΩΝ

Ref.: Kaufman and Stauber (1992), no. 40-1.

Volker Heuchert, co-editor of *Roman Provincial Coinage IV*, reports that he will cite two other examples in that volume: Berlin 1925/448 and Classical Numismatic Auctions 20 (25/03/1992), no. 430.

Lydia

47. Apollonius-Hieron, Nero, 54–68

Acc. number: 2004.14.88 (gift of James Schwartz)

AE, 19 mm, 3.26 g, 10:00

Obv.: Bust laureate r.; ΝΕΡΩΝ ΚΑΙΣΑΡ ΣΕΒΑΣΤΟC

Rev.: Apollo standing facing, holding patera in r. and l. hand on lyre;
ΑΠΟΛΛΩΝ ΙΕΡΕΙΤΩΝ

Ref.: RPC 3045

48. Thyatira, late first to second century AD

Acc. number: 2004.14.98 (gift of James Schwartz)

AE, 16 mm, 3.40 g, 12:00

Obv.: Head laureate r.

Rev.: Legend within wreath and border of dots: ΘΥΑ ΤΕΙΡΗ ΝΩΝ

Ref.: *BMC Lydia* 12. Previously sold as Malloy 25 (Dec. 1971 / Jan. 1972), no. 244.

The date of this coin is unclear. *BMC Lydia* qualifies its identification of the obverse portrait as Titus with a parenthetical question mark. For its part, *RPC2* suggests a second-century date but leaves much room by writing of the type that the portrait “does have a Flavian look, but could be later.” This new ANS acquisition is well preserved and certainly shows the style to be comfortable in the late first or second centuries. While the reverse legend is similar in style and division to *RPC2* 946, itself tentatively assigned to the late first century, the rendering of the wreath on the current piece is distinguished by its much smaller leaves. Finally, the axis of small-denomination coins of Thyatira is regularly either 6 or 12, so no help is found there. As to the identification of the obverse portrait, a youthful emperor cannot be rejected, but specificity would depend on a more secure dating, and the dangers of circular arguments abound. The local hero Tyrimnos, a son of Zeus, does appear in full figure, either standing or on horseback, on the reverses of later coins, and this may be an early portrait of this local god. Coins with a portrait of an older Heracles are also common from Thyatira, and the laureate figure on this piece does show that god’s heavy features, making this a reasonable identification. In the absence of a legend, no certainty is possible.

Phrygia

49. Aezani, Claudius, 41–54 (issued by Socrates Eudoxos)

Acc. number: 2004.14.83 (gift of James Schwartz)

AE, 20 mm, 5.34 g, 1:00

Obv.: Head laureate r.; ΚΛΑΥΔΙΟΝ ΚΑΙCΑΡΑ ΑΙΖΑΝΙΤΑΙ

Rev.: Zeus standing l., holding eagle and scepter; ΕΠΙ CΩΚΡΑΤΟΥC
ΕΥΔΟΞΟΥ

Ref.: RPC 3091

50. Julia, Nero, 54–68 (issued by Sergius Hephaiston)

Acc. number: 2004.14.87 (gift of James Schwartz)

AE, 17 mm, 3.39 g, 10:00

Obv.: Bust draped r.; ΝΕΡΩΝ ΚΑΙΣΑΡ

Rev.: Mên on horseback r., holding spear; ΣΕΡΓΙΟΣ ΗΦΑΙΣΤΩΝ ΙΟΥΛΙΕΩΝ

Ref.: *RPC* 3191

51. Philomelium, Severus Alexander, 222–235

Acc. number: 2004.14.151 (gift of James Schwartz)

AE, 16 mm, 1.93 g, 7:00

Obv.: Head laureate r.; ΑΥ Κ ΣΕΥΗ ΑΛΕΞΑΝΔΡΟΣ

Rev.: Eagle facing with open wings; ΦΙΛΟΜΗΛΕΩΝ

Ref.: *BMC Phrygia* 21

Cilicia

52. Anazarbus, Tranquilina

Acc. number: 2003.25.1 (gift of Wayne Sayles)

AE, 31 mm, 15.98 g, 6:00

Obv.: Bust r., stephane

Rev.: Bust of Sarapis r.

Ref.: Ziegler (1993) 706.2 (this coin)

The legends are illegible.

SEBASTIAN HEATH

ISLAMIC, SOUTH ASIAN, AND EAST ASIAN

The Islamic, South Asian, and East Asian cabinets had eighteen separate donations in the last two years, from fifteen different donors. These gifts added new material to the collection as well as supplementing our holdings. We are grateful to all our donors.

Mr. Sydney Rothstein continued his long history of giving with a donation including two rare Korean patterns, an early Japanese pattern, a full set of the twelve succession copper issues of early Japan, and a copy of the early *wa do kai chin* silver coinage type. James Schwartz made several important gifts, including five Ksatrapa and related drahms of ancient India, various Indian gold coins of recent centuries, five drahms from Tabaristan, and interesting Islamic coins. Some small but important first-millennium Hindu and Muslim silver coins from the northwestern Indian subcontinent were donated by Mr. Robert Tye. From Mr. Roger deWardt Lane we received an excellent example of the Mayyafariqin copper issue of 583 (1187–1188) with an image of the constellation Leo and the name of the Ayyubid sultan Ṣalāḥ al-Dīn, as well as a rare “ration” silver dollar from Xinjiang and some small gold fanams, mostly twentieth-century private issues. Mr.

Slobodan Srećković filled an important gap with the donation of an aqche from the Ottoman mint Qūjāniyya in modern Serbia. An interesting Arab-Byzantine coin of Scythopolis was given by Mr. Michael A. Smith.

The enormous gift of modern coins by James J. Boyle includes an estimated 1,670 coins from Islamic and Asian countries, still being catalogued as this is written. These will be greatly useful in amplifying our holdings of these coins and bringing them up to date. In the same area, Mr. Edward Hohertz donated some hard-to-obtain contemporary coins of the Republics of Armenia and Kazakhstan, and Mr. Emmett McDonald enlarged our representation of the recent coinage and paper money of Tunisia with a gift of eighteen coins and two bills ranging in date from 1960 to 1997. We are also grateful to Jack Balcer, Jack Benedict, the late George A. Fisher, Jr., Richard Lobel, the late Kenneth M. MacKenzie, and Robert Schaaf.

53. Sasanian empire, Hormizd II (303–309); Sakastan? date of issue unknown (Plate 40)

Acc. number: 2004.26.1 (gift of Robert W. Schaaf)

AE, 27 mm, 5.986 g, 3:00

Obv.: Bust of emperor facing left holding arrow wearing his first crown type; inscription to left [ML]K'n MLK'[]

Rev.: Fire altar with two facing attendants; bust left in flames on altar; inscription to left [..]rmzdy

Ref.: Göbl (1971), type Ia/3, pl. 5 nos. 86-87

Sasanian coins with left-facing portraits are quite unusual. Although this issue of Hormizd II has not been studied, it resembles an issue of his immediate successor Shapur II that has been attributed to Sakastan by Schindel in his recent magisterial catalogue (2004: vol. 1, 222, vol. 2, pl. 7, A15). It seems reasonable, therefore, to assign this issue to the same mint. It and another example acquired by Mr. Schaaf are the only two to come to light since Göbl's survey was published, and the ANS example is the first copper coin of Hormizd II in our collection.

54. Western Turkish kingdoms, with name Napki Malka (c. 675–725?); possibly minted at Ghazna (Plate 40)

Acc. number: 2004.14.224 (gift of James Schwartz, *ex* Gillette collection, *ex* Gibb collection)

AE, 28 mm, 3.498 g, 3:00

Obv.: Bust of ruler r., wearing crown with three *trisulas* (tridents); left of crown, *tamgha*; right downward in Pahlavi, *pk'* MK; border of dots

Rev.: Fire altar with two facing attendants holding lances or staffs

Ref.: Göbl (1967) vol. 1, 155–156, no. 225

Robert Göbl's encyclopedic survey of Hunnic coins (1967) identified this issue as a seventh-century coinage of the Alchon Huns, probably from Ghazna. Recently, Shoshin Kuwayama has placed it at Kabul under a Western Turk dynasty, starting sometime between 661 and 675 and continuing well into the eighth century (Kuwayama 1996, 1998, 1999). The new ruling house, although foreigners, maintained the city's Shivaite religious tradition as evidenced by the triple *trisula* crown, just as the previous dynasty, who were ksatriyas of Indian or local origin, wore a bull-head crown—both the bull and the three-tanged *trisula* being symbols of the Hindu god Shiva. Despite their religious beliefs, the prototype for the coinage of both dynasties was the Sasanian Iranian drachm, including the Zoroastrian fire altar on the reverse. The use of this prototype is explained by the prestige of the Sasanian drachm as the world's only important silver coinage in its era. The success of Kabul and Kapisa (Begram) to its north in maintaining a silver coinage from the fifth to the seventh century is probably a result of their control of the silver mines of the Panjhir River valley. It would seem that the mines declined in the seventh and eighth centuries, because the drachms of that era, such as this one, appear to be pure copper or bronze. The Panjhir mines regained their importance in the eighth century, giving rise to the bull and horseman issues of the Kabul Shahs, another Shivaite dynasty.¹

55. Bilād al-Shām (Syria), Scythopolis (Baysān, Bet Shean), 692–94 CE (Plate 40)

Acc. number: 2004.4.1 (gift of Michael Smith)

AE, 11.771 g, 28 mm, 3:00

Obv.: Two enthroned imperial figures, male left, female right; left upward CKYΘO; right downward ΠΟΛΗC

Rev.: In center, M, with cross above and letter A between the legs; to left downward ANNO; to right, uncertain Arabic word; in exergue NIK

Ref.: Sternberg auction sale 25–26 November 1976, no. 1072

This extremely rare coin came to us from a satisfied "customer" who e-mailed its image for identification. Upon learning that the coin was rare, interesting, and not represented in the ANS collection, he very generously donated it. This issue is contemporary with the previous coin, but from a thousand or so kilometers west. It is an issue of the mint of the town named in the Bible and on modern maps as Bet Shean, Scythopolis under the Romans (who settled some Scythians there), and Baysān in Arabic. Scythopolis was one of the Decapolis ("ten cities") association. Its ruins are in north-

1. The assistance of T. K. Mallon-McCorgay in preparing this note is gratefully acknowledged.

eastern Israel. This seems to be the fourth known example.² In an early presentation and subsequent articles the present author identified the issue as part of 'Abd al-Malik's new official coinage for Syria, and therefore dated it 692–94 (Bates 1976: 23–24; 1986: 250–251; 1989: 223–225; 1994: 387). The prototype was a much earlier Nikomedia follis of Justin II and Sophia, with a date corresponding to 5–. Most examples of the issue copy the Greek date accurately, but this one has what looks to be an Arabic word in place of the date. The word might be read as the letters *m-q-s-m*, although it is worth noting that the third letter has only two vertical strokes instead of the correct three. The only Arabic word with these four letters is *muqassim*, “divider”, an extremely rare technical term that does not appear in the dictionaries of older Arabic. More probably the outline is merely gibberish. The final *mīm* is nothing but the O of the exergual NIKO, which on many examples of this issue has migrated from the exergue up into the right field. As for the rest, it is perhaps a distant echo of the three Greek characters of the date. An intermediate, or perhaps posterior, distortion is found on two examples of this series, which have the O brought up to the level of the exergual line, and above it a cursive shape that might be Arabic letters or just a space-filler.³ Evidently the Greek characters were meaningless to the engraver, suggesting a date for the coin rather later than 694. In other words, this issue and the one with a cursive “word” are probably private copies of the official Baysan issue of 692–94, minted after that issue had been replaced by one with the same fabric but with two caliphal figures like the single figure on the general Syrian issue of 694–97. The copies might well have been minted by and for the Christian population of the town.

56. Ottoman empire, Sulaymān I (1520–1566); issued at Qūjāniyya with fixed accession date 926 (Plate 41)

Acc. number: 2004.1.1 (gift of Slobodan Srećković)

AR, 13 mm, 0.744 g, 11:00

Obv.: *Sulṭān Sulaymān b. Salīm Khān*, in four lines; outer circle

Rev.: *ʿAzza naṣrahu ḍarb Qūjāniyya sana 926*, in five lines; double outer circle

2. There is an unpublished specimen in the British Museum collection, 1970.7.2.1; an example was purchased by John J. Slocum from the Sternberg auction, 25–26 November 1976, no. 1072; another was in the collection of Edward Janis (*The Shekel* 11[3]: 33, May–June 1978); and this coin. The reverse die seems to be the same on all four.

3. Yale University collection, published by Bellinger (1938: no. 504, pl. 7) and Walker (1956: 2 no. Bel.1); and also a coin originally owned by Shraga Qedar, published in Berman (1976: no. 16, only the obverse is illustrated), fully illustrated in the Sternberg auction catalog 7, no. 1305, and purchased by the late Rudolph Morgenstern (1978: 400–401, images 5–6).

Ref.: Srećković (2003: 125 nos. 19–21)

Qūjāniyya is the transliteration of the mint-name on this coin, but its Serbian name is Kučajna, in the southern Carpathian Mountains about 150 kilometers southeast of Belgrad.⁴ In 1552–53 a mine that produced both gold and silver was opened there, and an Ottoman Turkish mint was established to turn the mine's output into coin (Katić 2001: 145–146). Gold altuns and silver aqches are known with the mint name, from the reign of Sulayman and his next three successors (Srećković 2002: 147). The mine continued to be important for a long time and was reopened in the nineteenth century. Naturally the coins are very rare. The Society has a gold sultani (1928.64.20), while an aqche attributed to this mint is in the Jem Sultan collection, donated by Olivia Lincoln in 1997 (Jem Sultan 1977: 114 no. 1096); but recently Slobodan Srećković, the leading expert on Ottoman aqches, informed us that the coin has been misread. Very generously he sent this example from his own collection to fill the gap in ours (Srećković 2003: 123–129).

57. Empire of Korea, Emperor Ko-Jong with regnal title Kuang Mu (1864–1907); Chōnhwankuk (Seoul) mint, regnal year 5 = 1901 (Plate 41)

Acc. number: 2004.7.15 (gift of Sydney Rothstein)

AR half won, 31.1 mm, 13.492 g, 12:00

Obv.: Characters for “half won” in wreath, plum blossom above

Rev.: Crested spread eagle holding globe (with lines of latitude and longitude) and beribboned sword; T'ae Guk (yin-yang) surrounded by Eight Trigrams on breast; T'ae Guk on feathers; above, crown with ribbons; all in circle of dots. Margin from 8:45: *tai han - kwang mu 5 yon - hwang je*; below HALF WON

58. Empire of Korea, Emperor Ko-Jong with regnal title Kuang Mu (1864–1907); Chōnhwankuk (Seoul) mint, regnal year 6 = 1902 (Plate 41)

Acc. number: 2004.7.16 (gift of Sydney Rothstein)

AR 5 chon, 20.8 mm, 4.758 g, 12:00

Obv.: As previous, except characters for “five chon” in wreath

Rev.: As previous, except year 6 and denomination 5 CHON

Russia was a major contender for influence in Korea before it was occupied by Japan in 1904. Russians had crossed Siberia to the Far East in the seventeenth century, but were at first kept back by the Chinese. In 1860, however, the boundary between Russia and China was set on the Amur and Ussuri Rivers, bringing Russia into contiguity with Korea for a few miles

4. The exact location can be found on the ingenious webpage of Cengiz Babacan at <http://www.babacan-coins.com/Ottoman/Maps/Maps.html>. Clicking on the mint name Qutcheyna (under the rubric K) brings up a map centered on Kučajna showing also many other Ottoman mints in central Rumelia.

inland from the sea. In the same year, Vladivostok was founded. By the end of the nineteenth century, Russia occupied Manchuria and ruled directly in the Liaotung Peninsula, west of Korea. With control of Korea's entire land frontier, it was natural in the imperialist politics of the era for Russia to seek control of the country itself. Japan, which began its penetration of Korea in 1874, only six years after the Meiji Restoration opened Japan to the world (and vice-versa), had an equal interest in keeping the Russians out and imposing its own domination. In 1895, however, a clumsy Japanese attempt to overthrow the Korean king, Ko-Jong, led him to turn to the Russians, who enjoyed a brief episode of dominance. In 1897, with Russian support, Ko-Jong declared himself Emperor of Korea, taking a new reign title, Kwang Mu. This was in effect a declaration of independence from China, which had held sovereignty over the Korean kingdom since the Manchu conquests of the seventeenth century, and left the way open for Russia to take control in Korea without confronting China directly. Later in the year, a Russian, Alexeiev, became Financial Advisor—more realistically, Financial Controller. He set up a Russo-Korean Bank, with its main branch in the Russian legation, chartered to take charge of Korea's revenues, coinage, and bond payments. Meanwhile, a new mint was being set up with Japanese technical help at Yongsan, near Seoul, and a new currency system was formulated with Alexeiev's advice. Although he and the Russo-Korean Bank were soon brought down in mid-1898 by pro-Japanese officials, the Finance Ministry remained sympathetic to the Russians and plans for the new coinage system went ahead. The coins were designed by a Korean, but the imperial eagle seems clearly to be of Russian inspiration. Technicians loaned to the new mint by the Japanese Osaka mint helped engrave the dies. Coins were produced in 1901 and 1902, but there seems to have been little demand for the new denominations; the mint continued to produce mainly 5-cent pieces of the old system, retaining the nineteenth-century dates. Furthermore, the Japanese, with their influence restored, machinated against the issue of the new coins. Doubtless, it was not only the Russianized eagle that was objectionable to them; it was also the proclamation of the new Empire of Korea, which implied equality with the Japanese Empire as well as with the Chinese. As a result, when Japanese troops occupied Seoul on the second day of the Russo-Japanese War, 9 February 1904, the coins were still in the Chõnhwankuk mint. In 1905 this mint, with its machinery, precious-metal bullion, and coins, was shipped to the Osaka mint, where the silver half-won coins were melted. From that time until 1910, when Korea ceased to exist as a separate state, its coinage was produced in Osaka with Japanese designs, but still according to the currency system worked out by the Russians. Later, the copper-nickel 5-chon coins were also shipped to Japan, cut in half, and sold to a scrap dealer. Nevertheless, some coins of the projected issue

escaped, and the ANS finally has examples of two of the three denominations known to exist.

MICHAEL L. BATES

UNITED STATES, LATIN AMERICAN, MEDALS, MEDIEVAL AND MODERN

Although all of the contributions and those who presented them are much appreciated, with several notable exceptions the additions to the Society's collections in these departments for 2003 and 2004 have not been as impressive as in some years past. The largest donation of the two years was a large gift of coins from many nations, primarily recent minor issues, given by James J. Boyle. Altogether, the Boyle collection included nearly 15,000 pieces, of which the preponderance will be useful accessions to the various cabinets, either filling lacunae or upgrading pre-existing examples.

Medieval

The Medieval department fared least well in terms of growth. For 2003, only two pieces were received: a denier of the Crusader Counts of Tripoli from Karl W. Shea and a lead cast representing a seal (the "Golden Bull") of the Holy Roman Emperor Charles IV from David P. McBride. The former is actually quite an interesting specimen which helps elucidate a new variety of the "New Style Star" billon coinage. For 2004, seven items were received: four lead strikings from the dies of the famous counterfeiter Carl Becker (or related items, including a struck lead example of the "Golden Bull") from Antoinette Bosco, and three European silver pieces from Trustee and benefactor Dr. James H. Schwartz.

Modern

The Modern World department (that is, monetary and related issues from the seventeenth century onward with the exception of items from the United States, Latin America, East and South Asia, and the Islamic countries) fared much better, thanks to the receipt of the Boyle collection. But for 2003, accessions of coins, currency notes, and tokens in this department amounted to only five items, in four gifts, including two German-occupied Guernsey notes of World War II from John Aiello, a French 5-franc piece (once a part of the collection of John Quincy Adams) from Dr. Sebastian Heath, a Central African 50-franc piece from Edward Hohertz, and an Australian half dollar from Peter Lewis.

The 2004 roster of "Modern" acquisitions included eight gifts. With some 7,000 or more coins (we are still in the process of cataloguing and accessioning them), the Boyle donation predominated. Other gifts include five minor pieces from Dr. Michael Bates; twenty-seven Italian mid-1970s *miniassegni* from Sidney

Harl; seven recent Swedish coins from Joanne Isaac; sixty-one miscellaneous coins, souvenirs, tokens, and fantasy items from Richard Lobel; an Estonian note from W. Noah Reynolds; three European silver pieces from Dr. James H. Schwartz; and five modern Bulgarian coins from Dr. Ute Wartenberg-Kagan.

United States

The United States department received some 175 items. In the fiscal year ending in 2003, there were seven gifts comprising fifteen pieces: two personal souvenir tokens from David T. Alexander, three souvenir tokens from me, a subway token from Joanne Isaac, a souvenir token from Chris McCawley and Bob Grellman, three exnumia souvenirs from Dr. James H. Schwartz, four US coins from Tom Tesoriero (a \$5 gold piece and three Morgan dollars which the collection needed), and a souvenir of the 1933 gold \$20 from David and Susan Tripp. In 2004, there were again seven gifts, amounting to some 160 items, including 130 coins from James J. Boyle, sixteen miscellaneous souvenir items from Dr. Michael Bates, a New York MTA card from Frederic G. Withington, nine recent exnumia souvenirs from Anthony Terranova, a satirical note from Dawn Bennett, a State quarter from Dr. Sebastian Heath, and a bank deposit bag from Dr. Michel Amandry.

Latin America

The Latin America department received one gift in 2003: a Jamaican credit card and four notes from Dr. Sebastian Heath. In 2004, the Society was given six contributions. The most significant of these was an important 4-reales piece of Charles and Johanna from Richard Ponterio. Other donors to this portion of the cabinet were Dr. Michael Bates (eleven recent Brazilian issues), Dr. Sebastian Heath (five items: two recent coins of Mexico, two from Jamaica, and one from the British East Caribbean), Richard Lobel (four Panamanian balboas), Emmett McDonald (seven contemporary Cuban pieces: five coins and two notes) and, once again, James J. Boyle, who made by far the largest addition to the Latin American holdings (around 1,600 coins).

Medals and Decorations

The Medals department received twelve gifts in 2003, containing twenty items. Dr. Jere L. Bacharach presented six various numismatic congress medals, mostly Egyptian; the Bottacin Museum (the Civic Museums of Padua) presented two art medals of Francesco Lucianetti, the Chiese di Padova agli Eremitani and the Paduan "Green Cross" (Ambulance Corps) ninety-year commemorative medal; Catherine E. Bullowa presented an IAPN Bangkok convention medal; George S. Cuhaj presented three personal souvenir medals relating to his work with the Boy Scouts of America; Dominique Delgrange-von Loeper presented the 2002 Northern France Numismatic Society's presidential medal honoring Dr. Pierre Bastien;

the Gateway Coin Club presented its 2003 annual medal; Dr. Sebastian Heath presented two new French Monnaie de Paris medals; Saltus Award-winning medalist Toivo Jaatinen presented his "Federation of Finnish Learned Societies" medal; the Medallic Art Company presented its 2003 "Colossus of Rhodes" calendar medal; Saltus Award-winner Dora de Pédery-Hunt presented her New York "Apple" art medal; and David C. Yates donated an example of the Sadi Carnot medal by Hubert Ponscarne. One other 2003 gift in the medals and decorations department remains anonymous.

Acquisitions to the Medals department for 2004 comprised fifteen gifts encompassing thirty-two pieces. They include a ten-year membership medal from the American Vecturist Association; a York, Pennsylvania, souvenir medal from Dr. Michael Bates; the British Numismatic Society's 2003 Centennial medal for the BNS; three unusual foreign medals from Roger deWardt Lane; the 2004 Gateway Coin Club of Merced, California's Merced River gold dredge medal, donated by the club; a reverse galvano of Benedetto Pistrucci's famous Waterloo medallion from David Gladfelter; Hubert Lanz' hand-sculpted personal medal by the Bulgarian artist and ancient coin die replicator Slavey; two of the Greek 2003 Athens Numismatic Museum medals from Metropolitan Museum of Art Curator Joan Mertens; a personal medal from Clifford Mishler; a 1993 award medal of the National Sculpture Society, by Patricia Verani, donated by the NSS; the Rochester Numismatic Society's 2003 medal, donated by the RNS; three personal art medals from Donald Scarinci (two by Alex Shagin and one by Bagomil Nikolov); ten miscellaneous interesting medals from Dr. James H. Schwartz; four Chicago Coin club pieces and one Art Kagin commemorative from Dr. Ute Wartenberg-Kagan; and a large negative galvano of Oscar Louis Roty's 1901 Marie Laurent medal from David C. Yates. Richard Lobel added to the Decorations collection a Russian issue from the Chernobyl nuclear reactor's disaster relief effort.

59. Latin Orient (Palestine). Counts of Tripoli, Bohemond V (1233-1252),
Tripoli mint (Plate 41)

Acc. number: 2003.2.1 (gift of Karl W. Shea)

BI "New Style Star" denier, Type 5 (var.), c. 1230-1252, 17 mm, 0.89 g,
11:00

Obv.: Within center circle, cross pattée, with prone crescent in first quarter
and two pellets in second; +BA[MVND'COM]S

Rev.: Within center circle, eight-pointed star with an annulet between each
ray; +CIVI[TAS TRIPO]L

Ref.: Shea 2 (this coin). Cf. Metcalf nos. 545-554; Schlumberger pl. 4, 17;
Sabine, no. 100, pl. 11; Malloy (1994), p. 173, 19

This Tripolitan Crusader coin is a unique variant of the substantive New
Style Star denier Type 5, attributed to the reign of Bohemund V or possibly

commencing near the end of the reign of Bohemund IV. Along with a single specimen in the ANS cabinet (1987.41.862), it features a prone crescent in the first quarter and two pellets in the second quarter rather than having nothing in the quarters of the cross on the reverse (like Types 1–3), a single pellet in the second and fourth quarters (as on Type 4), or three pellets arranged as a triangle in the second quarter (as on the standard issue of Type 5). On this new coin, the two pellets are arranged at the top and right side (that is, in line between the ends of the cross) while on the other ANS coin the two pellets are arranged to the top and left (that is, in line with the center of the cross). Shea believes that there could also be coins with the two dots in position to the left and right. Notably, these two variant coins are noticeably heavier than the average of the published Type 5 coins, and could indicate some metrological adjustment.

60. Germany, Munster. Bishop Ludwig II, Landgrave of Hesse (1310–1357) (Plate 41)

Acc. number: 2004.14.218 (gift of Dr. James H. Schwartz)

AR pfennig, 15 mm, 0.992 g, 7:00

Obv.: Bishop seated facing, wearing stola and miter, raising r. hand in benediction and raising Bible in l.; [LODEVICVS EPISCOPVS]; on lower l., trace of legend (EP)

Rev.: Head of the Apostle Paul, facing, sword upright (from r. hand); SANCTVS [PAVLVS]; the N is reverse-barred

Ref.: Cappe pl. 3, 47–8 (var.); Grote 47 (var.)

In comparison with Cappe's examples, on this coin the treatment of the bishop is varied: his collar and the quatrefoil at its closure are near his chin, while his buttons/ornaments are in the form x instead of +. On the reverse, the saint's forehead can be seen to have four lines in it.

61. France. Louis Philippe (1830–1848), Paris mint (Plate 41)

Acc. number: 2003.30.1 (gift of Dr. Sebastian Heath)

AR 5 francs, 1832-A, 37.5 mm, 24.902 g

Ref.: KM 749.1; *ex* Classical Numismatic Group, Sale 63, 21 May 2003, lot 1773; *ex* Stack's, Massachusetts Historical Society Sale, 17–18 Sept. 1971, lot 778 (part).

This coin enjoys the cachet of having come from the former personal collection of the sixth President of the United States, John Quincy Adams.

62. Mexico. Charles and Johanna (1519–1556), Early Series, c. 1540 (Plate 41)

Acc. number: 2004.6.1 (gift of Richard Ponterio)

AR 4 reales, Assayer P, 30 mm, 13.139 g, 9:00

Obv.: Crowned arms of Castile and Leon; +KAROLVS+ET+IOHANA+R+; on

l., M with pellet in annulet above and below; on r., P with pellet in annulet above and below.

Rev.: Crowned Pillars of Hercules; in field between, PLVS in panel slanted l. with 4 above; :HISPANIARVM:ET:INDIARVM:R:

Ref.: Cf. Menzel Mx-63; Nesmith 26; Ponterio; Proctor

Struck from previously unpublished dies, this noteworthy specimen is similar to Nesmith 26 except that both the obverse and reverse legends end in R instead of RE; the stops on the obverse are quatrefoils while those on the reverse are rondules in annulets, matching the punctuation marks above and below the letters designating the *ceca* and *ensayador* (M and P) on the obverse field and the ornaments on each corner of the central panel on the reverse. The assayer P, believed to be Pedro de Espina, was the second such officeholder in the new mint of Mexico. He evidently may have worked in 1538, when his P *ensaya* was punched over the R of Francisco del Rincón, the first assayer, as has been shown by Ponterio, and certainly in 1541, when he is named as assayer in surviving documents. The *ensaya* of the assayer F, apparently Francisco de Loaiza—who must have been the third assayer (1539), as discovered by Proctor—has been reported by Ponterio as found punched over the P of Pedro de Espina. Interestingly, Espina's coinage is more abundant than are those of the other assayers in the Early Series. They exhibit considerable variation in the details of their punctuation and ornamentation, which have not yet been thoroughly restudied since Nesmith's pioneering work. Our specimen is from the highly important hoard which the Ponterios have been studying and gradually dispersing over the past several years; it is a truly outstanding addition to the Society's collection of early Mexican coinage.

63. United States. Philadelphia mint, 1880 (Plate 41)

Acc. number: 2003.40.1 (gift of Tom Tesoriero)

AV 5 dollars, 21.6 mm, 8.334 g

Ref.: Breen 6709

Although the ANS cabinet does contain a proof specimen from the great Brock collection, donated in 1908 by J. P. Morgan, we were lacking any examples of the business strikes of this year, which included a number of date-position varieties. Also in this gift are several other coins that improve the collection. One is an 1887 Philadelphia mint Morgan dollar—again, a business strike which now joins the Morgan/Brock proof, heretofore the only exemplar of this year's issue in the cabinet. Two additional pieces in the Tesoriero gift are dollars of the first issue of the newly reopened New Orleans mint in 1879 and a 1904 New Orleans piece; both of these are significant upgrades of the single, worn examples already in the cabinet.

64. Australia. Fifth Adelaide Festival of Art, 1968, with case (Plate 42)
 Acc. number: 2004.19.2 (gift of Roger deWardt Lane)
 AE commemorative medal, 38.6 mm, 32.188 g, 12:00
Obv.: Bust of Queen Adelaide; in raised outer margin, in negative lettering THE CITY OF ADELAIDE; around bust, in inner circle QUEEN ADELAIDE/1792-1849
Rev.: Within wreath, W above AA superimposed on hunting horn; FIFTH FESTIVAL OF ARTS/*1968*
65. Brazil. Roberto Cochrane Simonsen, 1948 (Plate 42)
 Acc. number: 2004.19.1 (gift of Roger deWardt Lane)
 AE memorial medal, 69 mm, 145.246 g, 12:00
Obv.: Head of Simonsen l., flanked by dates; ROBERTO COCHRANE SIMONSEN/1889/1948
Rev.: Within wreath, HOMENAGEM/DA/CONFEDERAÇÃO/NACIONAL/DA/INDUSTRIA/*/BRAZIL
 Simonsen was an engineer, economist, entrepreneur, historian, and politician who helped lead the movement toward industrialization in Brazil.
66. Canada. Toronto "Apple," by Dora de Pédery-Hunt, n.d (2003) (Plate 43)
 Acc. number: 2003.28.1 (gift of Dora de Pédery-Hunt)
 AE cast medallic sculpture, with integral loop, 47.4 mm, 48.542 g (uniface)
Obv.: Apple; BIGGEST LITTLE APPLE/TORONTO
 A personal gift of the Saltus Award-winning medalist.
67. Egypt. Cairo Citadel, 1983, with accompanying blue velvet presentation box (Plate 43)
 Acc. number: 2003.41.6 (gift of Dr. Jere L. Bacharach)
 AR commemorative medal, inner and outer margin lines gold-plated, 70.5 mm, 161.066 g, 12:00
Obv.: Mosque in the citadel of Saladin; (Arabic legend, as translated into English on the reverse; order of the dates transposed)
Rev.: Plan of the citadel of Saladin; RESTORATION OF SALAH EL-DIN CITADEL - 1983 A.D./ 1403 H./ PRESIDENT MOHAMED HOSNI MUBARAK
68. Finland. Federation of Finnish Learned Societies, by Toivo Jaatinen, 1999 (Plate 44)
 Acc. number: 2003.12.1 (gift of Toivo Jaatinen)
 AE award medal, 82 mm, 12:00
Obv.: Scroll design, line of text; OMNIA PRO SCIENTIA
Rev.: Geometrical figure of octahedral linear design; TSV TIETEELLISTEN SEURAIN VALTUUSKUNTA VSD
 A personal gift of the Saltus Award-winning medalist.

69. France. Henri V (royal pretender), 1848 (Plate 45)

Acc. number: 2004.14.232 (gift of Dr. James H. Schwartz)

AE personal commemorative propaganda rebus medal, 41 mm, 33.858 g, 12:00

Obv.: Head of Henri de Bourbon, as the Count of Chambord, r., bearded; legend in the form of a rebus, to be interpreted and translated as:

All arms are open,

All hearts are yours.

Rev.: Legend in the form of a rebus, a poetic quatrain (four lines) above the date, to be interpreted and translated as:

The white republic brought forth misery,

The red republic brought on the terror;

Henri IV made happiness

And left to us in his descendent the model of the father.

Ref.: Bauquier 299

This infinitely peculiar medal is perhaps one of the most remarkable representations of a rebus in the field of numismatics. As heir to the dynasty of Henry IV, Henri, the Count of Chambord, was a Bourbon claimant who stood in the wings of French political history through most of the nineteenth century, leaving a substantial numismatic legacy of which this piece is surely the most entertaining example. Thanks to a major gift from J. Sanford Saltus and Archer Milton Huntington, the Society holds what may well be the pre-eminent collection of medallic works generated by the French Revolution of 1848. This piece constitutes yet another noteworthy representative.

70. France. Sadi Carnot, by Hubert Ponscarme, 1887 (Plate 45)

Acc. number: 2003.20.1 (gift of David C. Yates)

AE medal, 50.7 mm, 31.06 g (uniface)

Obv.: Facing bust of Sadi Carnot, head three-quarters right; SADI CARNOT

Marie François Sadi Carnot was the grandson of the French Revolutionary military organizer Lazare Carnot and nephew of the pioneering scientist Sadi Carnot. Serving from 1887 to 1894 as the third President of the French Republic, he was assassinated while in office by an Italian anarchist. Ponscarme was one of the most influential forces in the development of French medallic sculpture during the second half of the nineteenth century, but his works have been poorly represented in the collection; hence, Yates' kindness to help fill a significant void is most apt.

71. France. Marie Laurent, by Oscar Roty, 1901 (Plate 45)

Acc. number: 2004.27.1 (gift of David C. Yates)

Nickel-plated copper negative galvano of Oscar Louis Roty's Marie Laurent memorial medal, 280 mm (uniface)

Obv. (with reversed imagery and inscriptions): Head of Laurent three-quarters

facing, drapery over head and below face; across field in background, A/MARIE LAURENT/DOYENNE DES ARTISTES DRAMATIQUES/FONDATRICE DE L'ORPHELINAT DES ARTS/CHEVALIER DE LA LEGION D'HONNEUR/CETTE MEDAILLE A ETE OFFERTE COMME/UN HOMMAGE DE LEUR PROFOND RESPECT DANS LA REPRESENTATION/EXTRAORDINAIRE DONNEE AU/THEATRE NATIONAL DE L'OPERA/PAR SES COLLEGUES SES ADMIRATEURS ("to Marie Laurent, doyenne of the dramatic arts, Chevalier of the Legion of Honor, this medal has been offered, as homage of their profound respect in the extraordinary representation given to the national theater of the opera, by her colleagues [who are] her admirers"); on the tips of a ribbon, below her head, MAI and M·DCCCC·I ("May 1901"); a marginal legend reads, KLYTEMNESTRA·LA SACHETTE·LA MERE MOAN·MARFA·LA FLECHARDE·JACK SCHEPPARD·LA POISSARDE·LA TIREUSE DE CARTES (the titles of some of the plays in which Laurent performed).

Marie-Therese Alliouze-Luguet (1825–1901) was a great luminary of the French dramatic stage in the nineteenth century. She was known as Marie Laurent, after her first husband, Pierre-Marie Quilleveré, who went by the name of Pierre Laurent. Like her publisher son, Charles-Michel Clément Quilleveré Laurent, who was so recognized in 1878, in 1888 she was awarded the Légion d'Honneur in recognition of her accomplishments. Among her many significant roles, in 1853 she played in the first French dramatization of *La Case de l'Oncle Tom* (Harriet Beecher Stowe's *Uncle Tom's Cabin*). In 1881, Madame Laurent founded l'Orphelinat des Arts in support of the artistic community. Among her protégées was the famous Mèry Laurent (1849–1900), one of the most famous beauties of France in the nineteenth century, who adopted her patroness' name (and became a friend, lover, and model for a number of the greatest figures in the world of arts and letters, and the mistress of the prominent American dentist Dr. Thomas Wiltberger Evans). Oscar Roty (1846–1911) is among the most celebrated medalists of all time, and it is exciting to be able to add a galvano for one of his productions to the cabinet. A student of Ponscarne, among others, he was a master of the "soft-edge" technique for which French medallic sculpture became renowned during the Beaux-Arts period.

72. France. Numismatic Society of Northern France, Lille, 2002 (Plate 46)

Acc. number: 2003.4.1 (gift of Dominique Delgrange-von Loeper)

AE commemoration medal honoring Dr. Pierre Bastien, 30.3 mm, 12.12 g, 12:00

Obv.: SOCIETE DE NUMISMATIQUE DU NORD DE LA FRANCE / 1925

Rev.: JACQUES VERHASSELT / PRESIDENT / Dr. PIERRE BASTIEN / PRESIDENT / D'HONNEUR / 2002 / W

Note the use of the use of the traditional French mintmark W, signifying an issue of the city of Lille. The renowned Roman specialist Dr. Bastien has been an important friend of the Society.

73. Germany (Bulgaria). Personal medal of Dr. Hubert Lanz and family, by Petrov Slavey, n.d. (Plate 46)

Acc. number: 2004.25.1 (gift of Dr. Hubert Lanz)

AR personal souvenir medal, struck from handcut dies, after the antique, 34 mm, 17.070 g, 12:00

Obv.: Draped bust of Lanz l.; HVBERT LANZ FELIX PATER

Rev.: On l., Hercules battling Nemean lion, Minerva and Mercury standing r.; on r., Lanz family in classical attire standing regarding one another; BONV S EVENTVS LANZZ

This charming, fanciful piece is an excellent example of the craft of the controversial Bulgarian artist whose reproductions of ancient coins have gained notoriety.

74. Great Britain. Battle of Waterloo, British Royal Mint, by Benedetto Pistrucci, n.d. [1849] (Plate 46)

Acc. number: 2004.34.1 (gift of David Gladfelter)

Cu commemorative medallion, obverse galvano, 141 mm

Obv.: Portraits of the four victorious allied monarchs facing l.: the Regent George, Prince of Wales (later King George IV of Great Britain), Emperor Franz I of Austria, Czar Alexander I of Russia, and King Friedrich Wilhelm of Prussia; above is the chariot of Apollo and below, the fleeing chariot of Night, heralding the victory of the forces of Good; to the right of Apollo are his companions Iris, goddess of the rainbow, and Zephyrus, god of the mild west wind; to l. are the Gemini, the zodiacal sign under which the battle took place in 1815; to l. and r. of the portraits are the figures of Themis, representing Justice, and Hercules, representing Might; lower down, on either side of the chariot of Night, are the goddesses of destiny—the Fates—placed below Themis to indicate that the future may be governed by justice, and of vengeance—the Furies—being suppressed by Hercules into the Cimmerian caverns, meaning that henceforth strength shall be used constructively; (anepigraphic)

Ref.: Hocking p. 207–210; Brown 870; Eimer 1067; *ex* Presidential Coin and Antique Sale 72, Dec. 2003, lot 580A

This piece is one of the original electro-galvanic “castings” of 1849, with an accompanying period wooden frame, 6 7/8”. The great Pistrucci (1784–1855) labored for over thirty years on the dies for the Waterloo medallion, only to find that they were too large and too delicate to be properly hard-

ened; hence, only galvanoes and gutta-percha versions were produced by the Royal Mint as the original exemplars of this striking issue.

75. Italy, Padua. Green Cross Ambulance Corps, 2003, by Francesco Lucianetti (Plate 47)

Acc. number: 2003.42.1 (gift of the Civic Museums of Padua, Bottacin Museum)

AE cast medallic sculpture, 62 × 57 mm, 12:00

Obv.: Watch tower on left; plan of the old, fortified city; CROCE VERDE; (inset) PADOVA 1913/T. DI SELVAZZANO/1982/ALBIGNASEGO/1986/CADONEGHE/1982

Rev.: Emergency aid vehicles: helicopter, automobile, carriage, bicycle ambulances; 1913/2003

This ninetieth anniversary commemorative of the Green Cross is part of the handsome series of Paduan civic issues by Lucianetti.

76. Ukraine. Cardinal Josef Slipiy, 1965 (Plate 47)

Acc. number: 2004.19.3 (gift of Roger deWardt Lane)

AE commemorative medal, 45.5 mm, 31.233 g, 12:00

Obv.: Slipiy standing half-length l. attired as cardinal and holding emblems of office, city view in background; (two-line Ukrainian legend, in Cyrillic script) "Dedicated to Josef Slipiy, Archbishop and Metropolitan, in commemoration of his nomination as cardinal by Pope Paul VI, 22 February 1965"

Rev.: Cardinal's regalia; continuation of legend from the obverse

Josyf Ivanovych Cardinal Slipiy (1892–1984) of the Ukrainian Greek Catholic Church, an important popular ecumenical figure, was a scholar and an international voice for persecuted Christians. A prolific writer, in 1939 he was ordained archbishop, and in 1944 became the Metropolitan of the Ukrainian Greek Catholic Church. In 1945, Slipiy was arrested by the Soviet authorities and spent eighteen years in Stalinist prisons, labor camps, and Siberian exile. He was released in 1963 through the intervention of Pope John XXIII and President Kennedy, and during the remainder of his life he energized the Ukrainian Catholic people and other adherents. Over a million of the faithful participated in his re-interment in the Ukraine in 1992.

77. United States. Louis Agassiz, Philadelphia mint, by William Barber, n.d. [1874] (Plate 48)

Acc. number: 2004.14.229 (gift of Dr. James H. Schwartz)

AE memorial medal, 45.7 mm, 52.329 g, 12:00

Ref.: Julian PE-1

The relatively well-known, handsome US Mint medal, of which this is a fine original example, honors a scientist not so widely recognized today—a man who at the time of his death was considered one of the great sages of the country. Born in Switzerland, Louis Jean Randolphe Agassiz (1807–1873) was educated at Zürich, Heidelberg, München, and Erlangen, later moving to Paris, where he studied under Cuvier, whom he succeeded as professor at Neuchâtel. A scientist of the naturalist-romantic-theosophical school, Agassiz was one of the pioneers of glaciology and the discovery of the existence of the Pleistocene Ice Age. By the 1840s, he was renowned as the foremost vertebrate palaeontologist in the study of fossil fish. Agassiz fled Europe in 1846 due to bankruptcy and divorce. From 1848, he became ensconced at Harvard University, where in spite of his education and knowledge he gained notoriety as an anti-evolutionist. There, he helped found the Museum of Comparative Zoology and later was instrumental in the establishment of the National Academy of Sciences. In 1863, he was appointed a regent of the Smithsonian Institution. Agassiz helped sponsor the entire study of natural sciences in America, but his reputation has suffered in spite of his many achievements because he was the last scientist of significant repute to believe in special creation. Barber's considerable skill as a portraitist is well-demonstrated on the obverse of this medal.

78. United States: California. Gateway Coin Club of Merced, 2004 (Plate 48)
 Acc. number: 2004.20.1 (gift of the Gateway Coin Club of Merced, California)
 AE annual commemorative medal, 39 mm, 26.389 g, 12:00
 Obv.: The Snelling Gold Dredge no. 1, built near the "G Grade" River Bridge, Merced; DREDGING FOR YELLOW RICHES / SNELLING – MERCED FALLS / 2004 / ON THE MERCED RIVER
 Rev.: Old Merced County Courthouse; * GATEWAY COIN CLUB * / MERCED, CALIFORNIA
 One of the successive annual issues of this productive club.

ROBERT WILSON HOGE

REFERENCES

- Balcer, J. M. 1968. The early silver coinage of Teos. *Revue Suisse de Numismatique* 47: 5–50.
 Bank of Korea. 1969. *The history of Korean money*. Seoul: Bank of Korea.
 Bates, Michael L. 1976. The "Arab-Byzantine" bronze coinage of Syria: an innovation by 'Abd al-Malik. In: *A colloquium in memory of George Carpenter Miles (1904–1975)*, pp. 16–27. New York: American Numismatic Society.

- . 1986. History, geography, and numismatics in the first century of Islamic coinage. *Revue Suisse de Numismatique* 65: 231–262.
- . 1990. The coinage of Syria under the Umayyads, 692–750 A.D. In: M. Adnan Bakhit and Robert Schick, eds., *The fourth international conference on the history of Bilād al-Shām during the Umayyad period: proceedings of the third symposium, 2–7 Rabīʿ I 1408 A.H./24–29 October 1987*, English section, vol. 2, pp. 195–228. Amman: Jordan University. Arabic translation by Nāʾif al-Qasūs, *Maskūkāt Sūriyya fi fitrat al-khilāfa al-umawiyya, 73[sic]–132 h. (692–750 m.)*. *Yarmouk Numismatics* 2(1): 15–51, 1990.
- . 1994. Byzantine coinage and its imitations, Arab coinage and its imitations: Arab-Byzantine coinage. *Aram* 6: 381–403.
- Bauquier, Henry and Gaston Cavalier. 1912 *Histoire numismatique du comte de Chambord: ou, Nomenclature et description de toutes les médailles connues se rapportant au comte de Chambord (duc de Bordeaux-Henri V) avec dessin d'après les originaux, par Mme. F. Coussens, de plus de 300 documents métalliques émis de 1820 à 1883*. Paris: H. Chamion, 1911–1928, supplement 1941.
- Bellinger, A. R. 1938. *Coins from Jerash, 1928–1934*. Numismatic notes and monographs 81. New York: American Numismatic Society.
- Berman, Ariel. 1976. *Islamic coins—exhibition winter 1976*. Jerusalem: L. A. Meyer Memorial Institute for Islamic Art.
- BMC: Mattingly, H. 1923–1950. *Coins of the Roman Empire in the British Museum*, vols. 1–5; Carson, R. A. G. 1962. *Coins of the Roman Empire in the British Museum*, vol. 6. London: British Museum.
- BMC Lycia: Hill, G. F. 1897. *Catalogue of the Greek coins of Lycia, Pamphylia and Pisidia*. London: Trustees of the British Museum.
- BMC Lydia: Head, B. 1901. *A catalogue of the Greek coins in the British Museum: catalogue of the Greek coins of Lydia*. London: Trustees of the British Museum.
- BMC Phrygia: Head, B. 1906. *A catalogue of the Greek coins in the British Museum: catalogue of the Greek coins of Phrygia*. London: Trustees of the British Museum.
- BMCRR: Grueber, H. A. 1910. *Coins of the Roman Republic in the British Museum*. London: Trustees of the British Museum.
- Breen, Walter. 1988. *Walter Breen's complete encyclopedia of U.S. and colonial coins*. New York: F.C.I. Press, Inc. (Doubleday).
- Brown, Laurence. 1980. *A catalogue of British historical medals, 1760–1960*. Vol. I. *The accession of George III to the death of William IV*. London: Seaby.
- Buttrey, T. V., Erim K. T., Groves Th. D., Holloway R. R. 1989. *Morgantina studies II: the coins*. Princeton: Princeton University Press.
- Cahn, H. 1970. *Knidos: die Münzen des sechsten und des fünften Jahrhunderts v. Chr.* Berlin: W. de Gruyter.

- Cappe, Heinrich Philipp. 1850. *Die mittellaltre Münzen von Münster, Osnabrück, Paderborn, Corvei und Hervord*. Dresden: Heinrich Philipp Cappe.
- Cohen, H. 1880–1892. *Description historique des monnaies frappées sous l'empire romain*. Paris: Rollin & Feuardent.
- Craig, Alan D. 1955. *The coins of Korea and an outline of early Chinese coinages*. Berkeley: The Author.
- Crawford, M. H. 1974. *Roman republican coinage*. Cambridge: Cambridge University Press.
- DO: Bellinger, A. R. 1966. *Catalogue of Byzantine coins in the Dumbarton Oaks collection and in the Whittemore collection*. Vol. 1, *Anastasius I–Maurice*. Washington, D.C.: Dumbarton Oaks.
- Eimer, Christopher. 1987. *British commemorative medals and their values*. London: Seaby.
- Göbl, Robert. 1967. *Dokumente zur Geschichte der iranischen Hunnen in Baktrien und Indien*. 4 vols. Wiesbaden: Otto Harrassowitz.
- . 1971. *Sasanian numismatics*. tr. P. Severin. Braunschweig: Klinkhardt & Biermann.
- Grote, H. 1856. *Die münsterschen Münzen des Mittelalters und das ältere Münz- und Geldwesen Westfalens*. Leipzig: Hahn'sche Verlagshandlung.
- Hackens, T. 1973. Le monnayage de l'atelier de Délos à l'époque archaïque. In: *Études déliennes*, pp. 209–226. Bulletin de Correspondance Hellénique supplément 1. Athens: École Française d'Athènes.
- Heipp-Tamer, C. 1993. *Die Münzprägung der lykischen Stadt Phaselis in griechischer Zeit*. Saarbrücken: Saarbrücker Druck und Verlag.
- Hocking, William John. 1910. *Catalogue of the coins, tokens, medals, dies and seals in the museum of the royal mint*. London: His Majesty's Stationery Office.
- Jem Sultan [William D. Holberton]. 1977. *Coins of the Ottoman Empire and the Turkish Republic: a detailed catalogue of the Jem Sultan collection*. Thousand Oaks, Cal.: B & R Publishers.
- Julian, R. W. 1977. *Medals of the United States mint: the first century, 1792–1892*. El Cajon, Cal.: Token and Medal Society.
- Katić, Srđan. 2001. Турско утврђење Кучајна од оснивања 1552/53. до аустријског освајања 1718. године [The Turkish fortification of Kučajna from its establishment in 1552/53 to the Austrian conquest in 1718]. *Историјски Часопис* 48: 137–146.
- Kaufmann, F.-M. and J. Stauber. 1992. Poimanenon bei Eski Manyas? Zeugnisse und Lokalisierung einer kaum bekannten Stadt. In: *Studien zum antiken Kleinasien II*, pp. 43–85. Asia Minor Studien 8. Bonn: R. Habelt.
- Klaasesz, Paul F. 1949. The coinage of Korea during the Russian influence, 1901–02. *The Numismatic Scrapbook Magazine* 15: 201–203.
- . 1951. The coinage of Korea during the Russian influence: supplement to an

- article published in the March 1949 issue. *The Numismatic Scrapbook Magazine* 17: 204.
- Krause, Chester L. and Clifford Mishler. 2001. *Standard catalog of world coins, 1801–1900*, 3rd ed. Iola, Wis.: Krause Publications.
- Kuwayama, Shoshin. 1996 [1994]. Identity of the Napki coins. *ONS Newsletter* 148 (Spring 1996): 10–12; reproduced from Asko Parpola and Petteri Koskikallio, eds., *South Asian Archaeology 1993: Proceedings of the Twelfth International Conference of the European Association of South Asian Archaeologists (Helsinki University 5–9 July 1993)*. *Annales Academiae Scientiarum Fennicae B* 271. Helsinki: Suomalainen Tiedekatemia, 1994.
- . 1998. Not Hephthalite but Kapisian Khingal: identity of the Napki coins. In: Amal Kumar Jha and Sanjay Garg, eds., *Ex moneta: essays on numismatics, history and archaeology in honour of Dr. David W. MacDowall*, vol. 2, pp. 331–349. New Delhi: Harman Publishing House.
- . 1999. Historical notes on Kāpīśī and Kābul in the sixth–eighth centuries. *Zinbun* 34(1): 25–77.
- Malloy, Alex, Irene Fraley Preston, and A. J. Seltman. 1994. *Coins of the Crusader states, 1098–1291: including the Kingdom of Jerusalem and its vassal states of Syria and Palestine, the Lusignan Kingdom of Cyprus (1192–1489), and the Latin Empire of Constantinople and its vassal states of Greece and the Archipelago*. Allen G. Berman, ed. New York: Attic Books.
- Martini, R. 1988. *Monetazione bronzea romana tardo-repubblicana I*. Glaux I. Milano: Edizioni Ennerre.
- May, J. M. F. 1966. *The coinage of Abdera (540–345 B.C.)*. London: The Royal Numismatic Society.
- Menzel, Sewall. 2004. *Cobs, pieces of eight, and treasure coins: the early Spanish-American mints and their coinages*. New York: American Numismatic Society.
- Metcalf, D. M. 1995. *Coinage of the Crusades and the Latin East*, 2nd ed. London: Royal Numismatic Society.
- Metcalf, W. E. 1996. *The silver coinage of Cappadocia, Vespasian–Commodus*. Numismatic notes and monographs 166. New York: American Numismatic Society.
- Morgenstern, Rudolf. 1978. Comentario sobre algunas monedas orientales de la época de transición. *Numisma* 28: 399–408.
- Nesmith, Robert I. 1955. *Coinage of the first mint of the Americas at Mexico City, 1536–1572*. Numismatic notes and monographs 131. New York: American Numismatic Society.
- Ponterio, Kent. Forthcoming. The coinage of Mexico struck during the reign of Charles and Johanna: several new finds reassigning the chronology of assayers. In: *Our nation's coinage: varied origins*. Proceedings of the Coinage of the Americas Conference 16. New York: American Numismatic Society.

- Price, M. and N. Waggoner. 1975. *Archaic Greek coinage: the Asyut hoard*. London: V. C. Vecchi and Sons.
- Proctor, Jorge. 2000. E-mail correspondence with Sewall Menzel; data on file at ANS.
- RGA: Waddington, W., E. Babelon, and Th. Reinach. 1904–25. *Recueil général des monnaies grecques d'Asie Mineure*. Paris: E. Leroux.
- RIC: Mattingly, H. et al. 1926–84. *Roman imperial coinage*, vols. 1–5. London: Spink.
- RPC: Burnett, A., M. Amandry, and P. P. Ripolles. 1992. *Roman provincial coinage*. Vol. 1, *From the death of Caesar to the death of Vitellius (44 BC–AD 69)*. London: British Museum Press; Paris: Bibliothèque Nationale.
- RPC2: Burnett, A., M. Amandry, and I. Carradice. 1999. *Roman provincial coinage*. Vol. 2, *From Vespasian to Domitian (AD 69–96)*. London: British Museum Press.
- Sabine, C. J. 1980. The billon and copper coinage of the Crusader county of Tripoli, c. 1102–1268. *Numismatic Chronicle* 7th ser. 20: 71–112.
- Schindel, Nikolaus. 2004. *Sylloge nummorum sasanidarum Paris Berlin Wien 3 Shapur II.–Kawad I./2. Regierung*. Österreichische Akademie der Wissenschaften, philosophisch-historische Klasse, Denkschriften 325; Veröffentlichungen der numismatischen Kommission 42. Vienna: Verlag der österreichischen Akademie der Wissenschaften.
- Schlumberger, Gustave. 1954 [1878–82]. *Numismatique de l'Orient latin*. Graz: Akademische Druck- u. Verlagsanstalt [reprint].
- Shea, Karl W. 2002. The Tripolian [sic] new style star denier, type 5—a new variety. *Journal of the Classical and Medieval Numismatic Society* 3.3 (September): 111–119.
- Srećković, Slobodan. 2002. *Ottoman mints and coins*. Belgrade: The Author.
- . 2003. *Akches*. Vol. 3, *Süleyman I Kanunî, 926–974*. Belgrade: The Author.
- Strack, P. L. 1937. *Untersuchungen zur römischen Reichsprägung des zweiten Jahrhunderts*. Vol. 3, *Die Reichsprägung zur Zeit des Antoninus Pius*. Stuttgart: W. Kohlhammer.
- Sydenham, E. A. 1952. *The coinage of the Roman Republic*. London: Spink & Son.
- Van Alfen, P. 2001. Acquisitions for 2000 and 2001: Greek. *American Journal of Numismatics* 13: 151–167.
- . 2004. The mighty octopus? *American Numismatic Society Magazine* 3(2): 46–47.
- Vismara, N. 1989. *Monetazione arcaica della Lycia*. Milano: Ed. Ennerre.
- Walker, John. 1956. *A catalogue of the Muhammadan coins in the British Museum, II: a catalogue of the Arab-Byzantine and Post-Reform Umayyad coins*. London: British Museum.

Ziegler, R. 1993. *Kaiser, Heer und städtisches Geld. Untersuchungen zur Münzprägung von Anazarbos und anderer ostkilikischer Städte*. Ergänzungsbände zu den Tituli Asiae Minoris 16. Wien: Verlag der österreichischen Akademie der Wissenschaften.

Plates

Plate 1

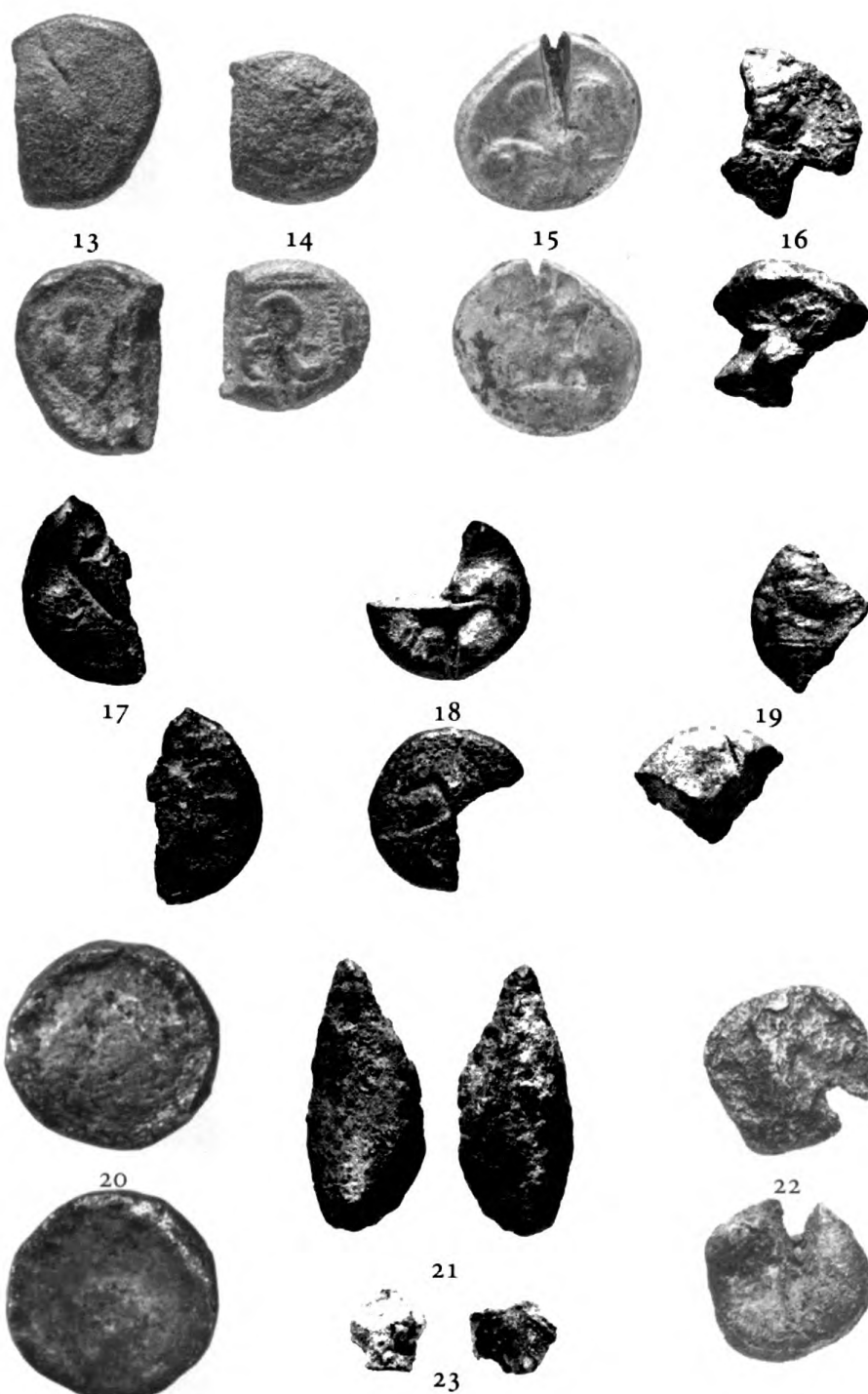


Overstruck Cypriot Stater

Plate 2



Ingot Hoard

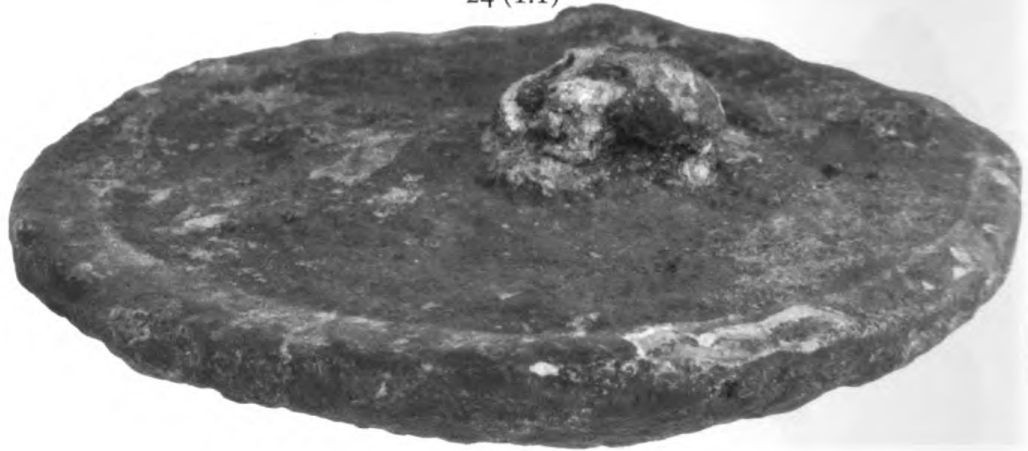


Ingot Hoard

Plate 4



24 (1:1)



24 (.50x)



Ingot Hoard



25 (.60x)



25 (1:1)



26 (.50x)

Ingot Hoard

Plate 6

Frontal Eye Types



Pi-Style Types



A New Athenian "Owl" and Bullion Hoard



A New Athenian "Owl" and Bullion Hoard

Plate 8



A New Athenian "Owl" and Bullion Hoard



A New Athenian "Owl" and Bullion Hoard

Plate 10



A) Buttrey Types



Pi-Style Types

B) Miscellaneous Semitic Inscribed



C) Style Group I



A New Athenian "Owl" and Bullion Hoard

Style Group Ia



Style Group II



Style Group III



A New Athenian "Owl" and Bullion Hoard

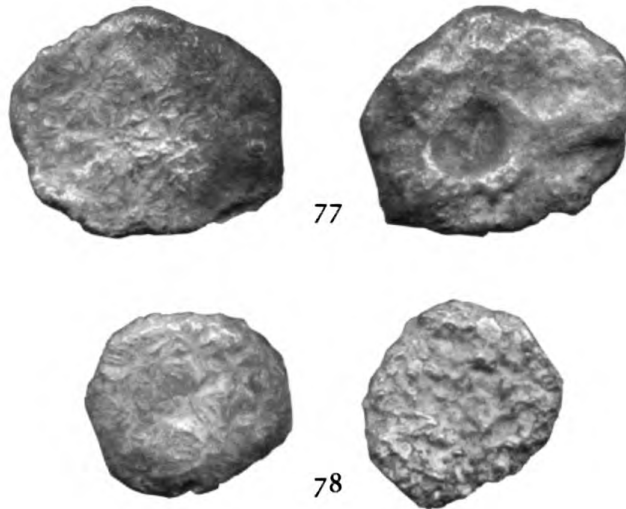
Plate 12

Misc. Imitations



A New Athenian "Owl" and Bullion Hoard

Dumps



A New Athenian "Owl" and Bullion Hoard



Twenty-two Alexanders in Ann Arbor

Plate 14



Twenty-two Alexanders in Ann Arbor



Twenty-two Alexanders in Ann Arbor

Plate 16

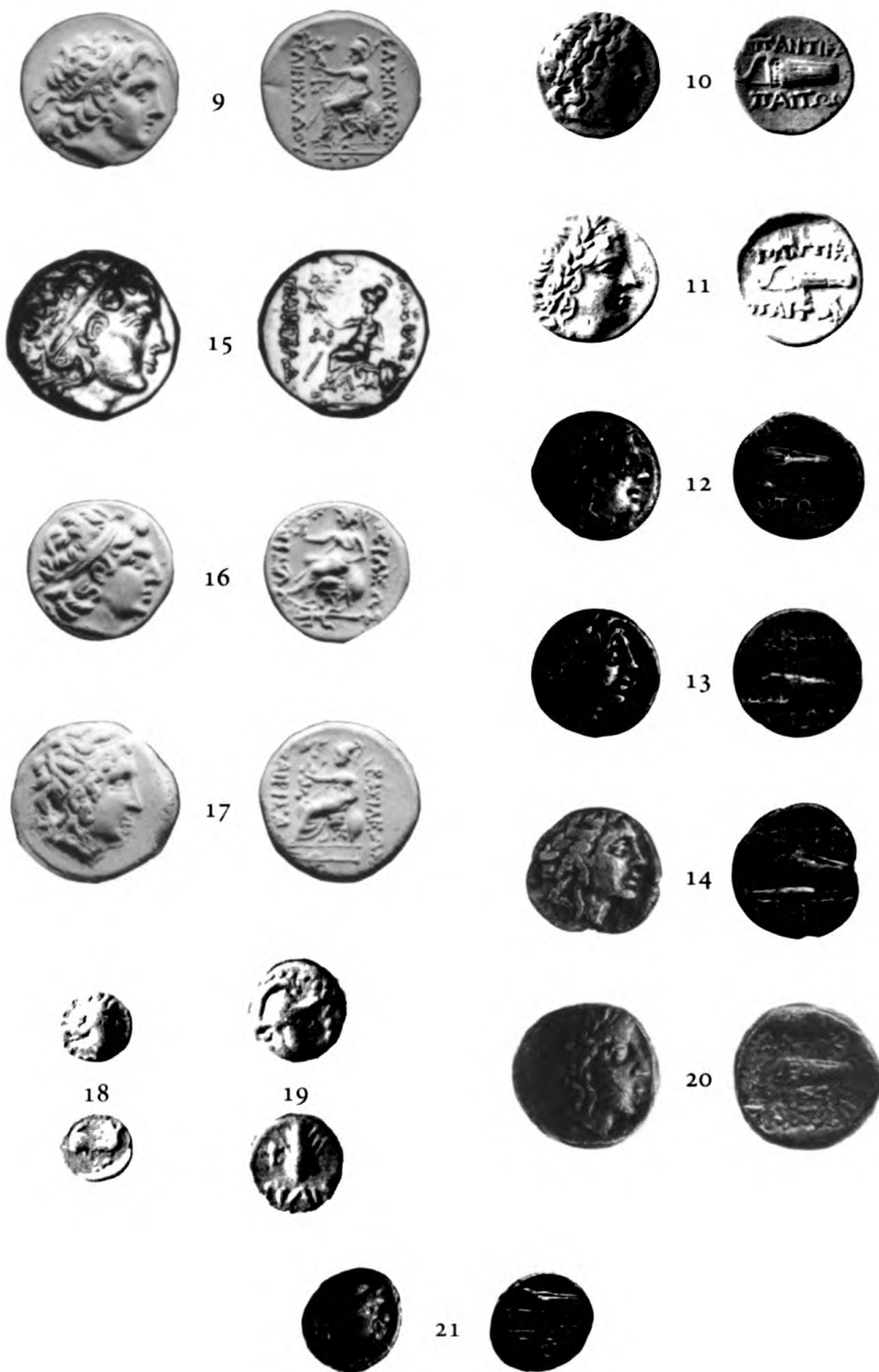


Twenty-two Alexanders in Ann Arbor



Silver Coinage of the Bosporan King Spartocus

Plate 18

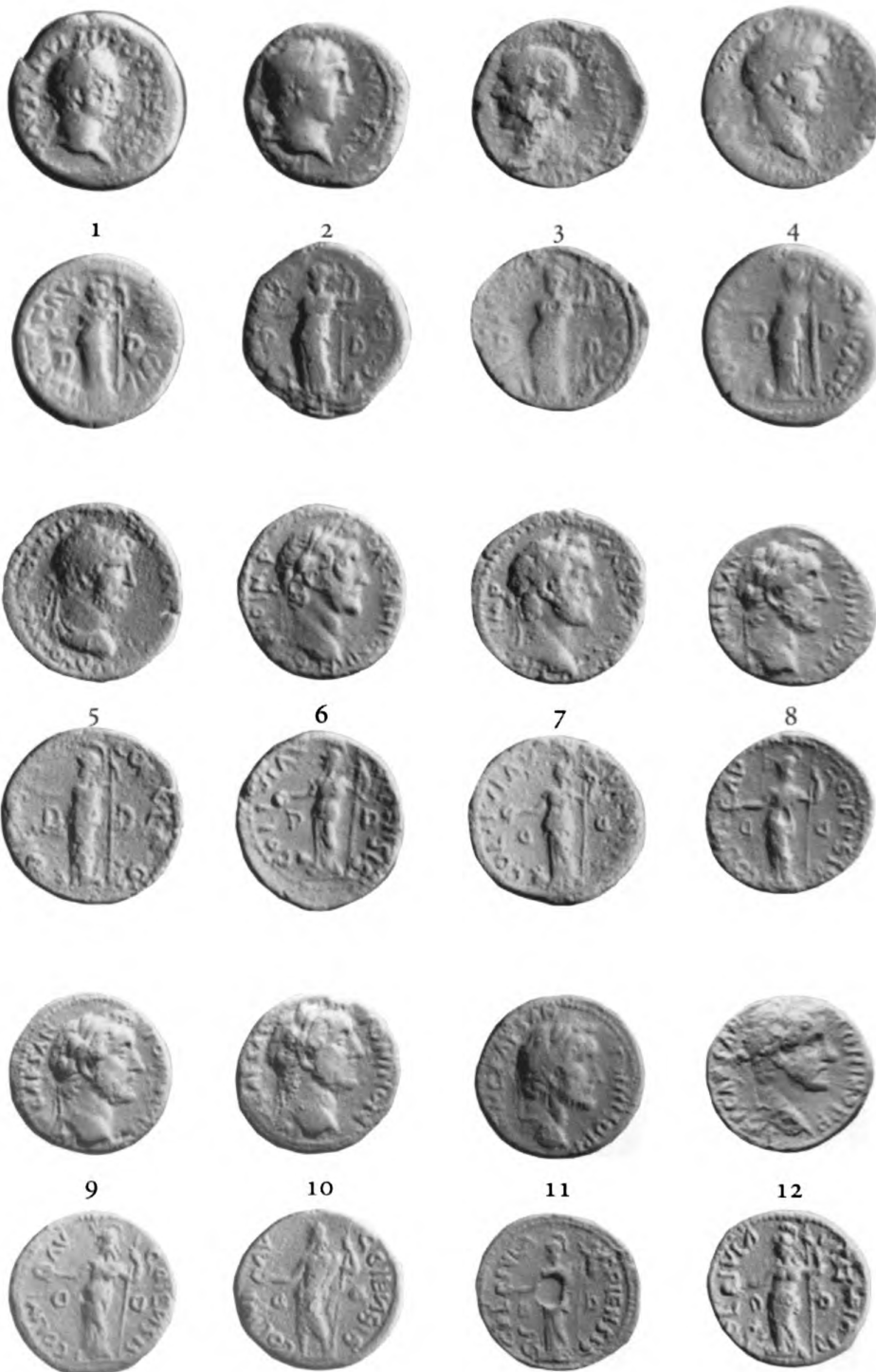


Silver Coinage of the Bosphoran King Spartocus

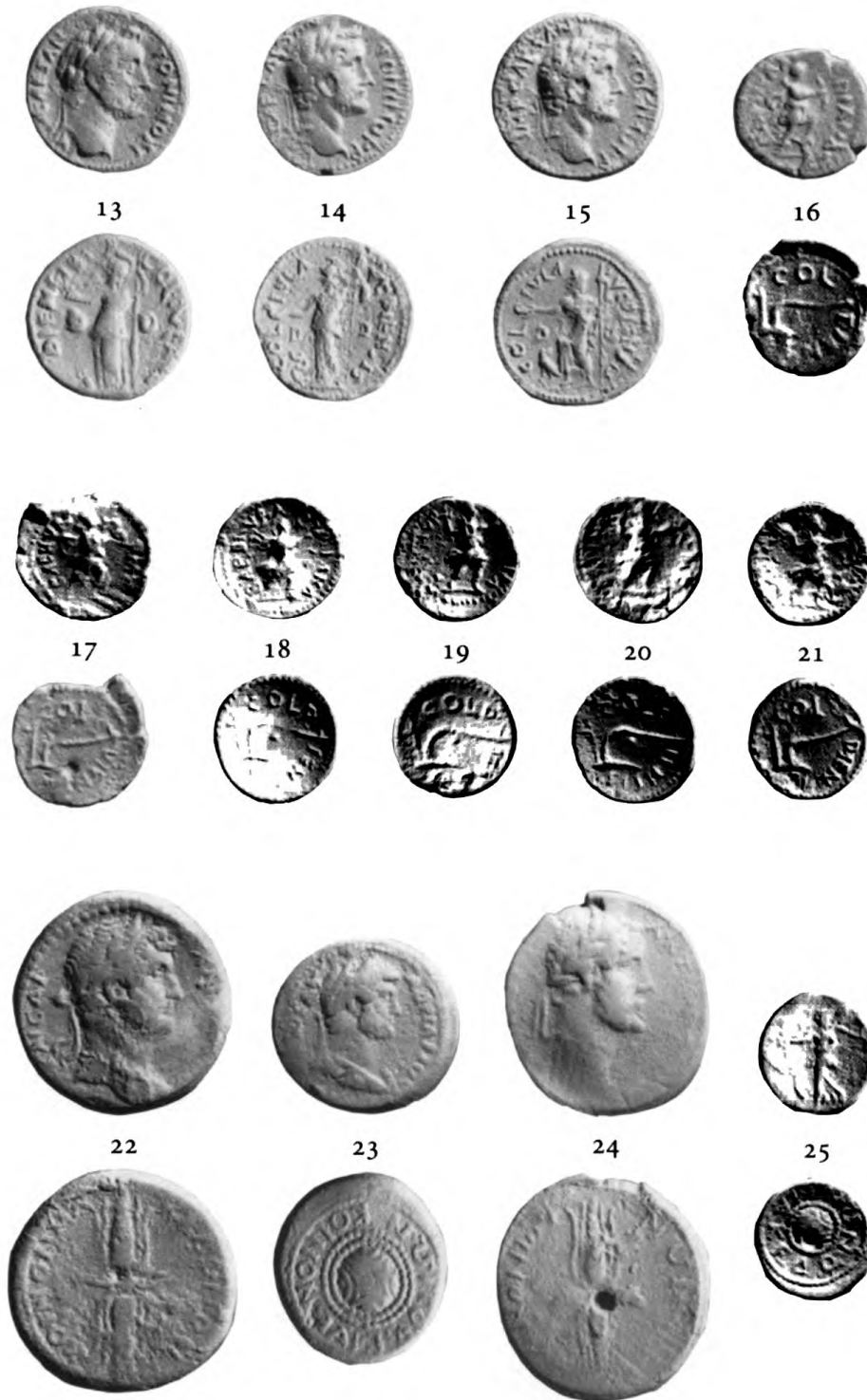


Another Fimbria Cistophorus

Plate 20

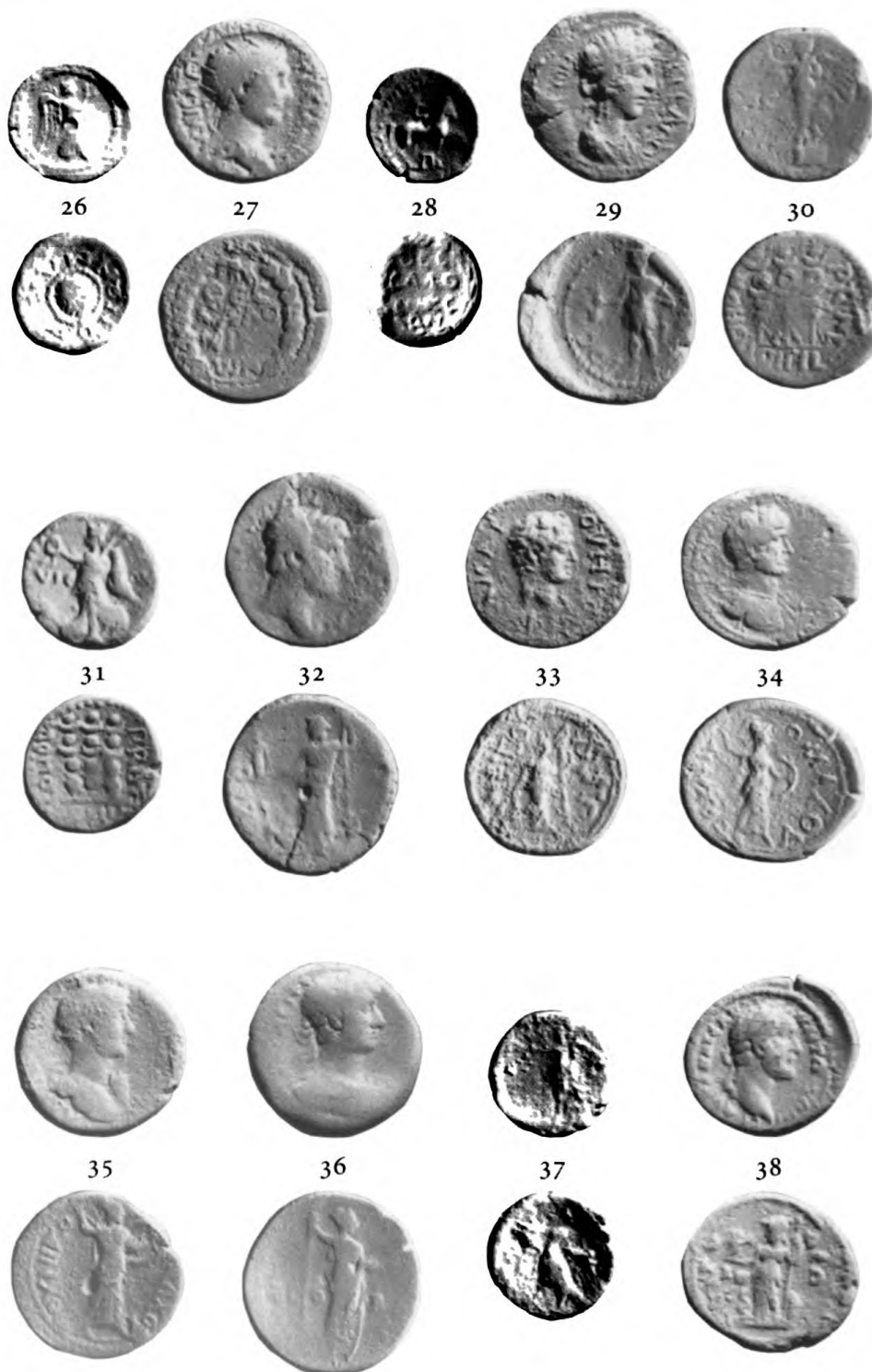


Multiple Hoards from Dion



Multiple Hoards from Dion

Plate 22



Multiple Hoards from Dion



39



40



41



42



43



44



Multiple Hoards from Dion

Plate 24

Andükān



Coins from Andükān and Shelji

Andūkān



17



19



21



22



23



24



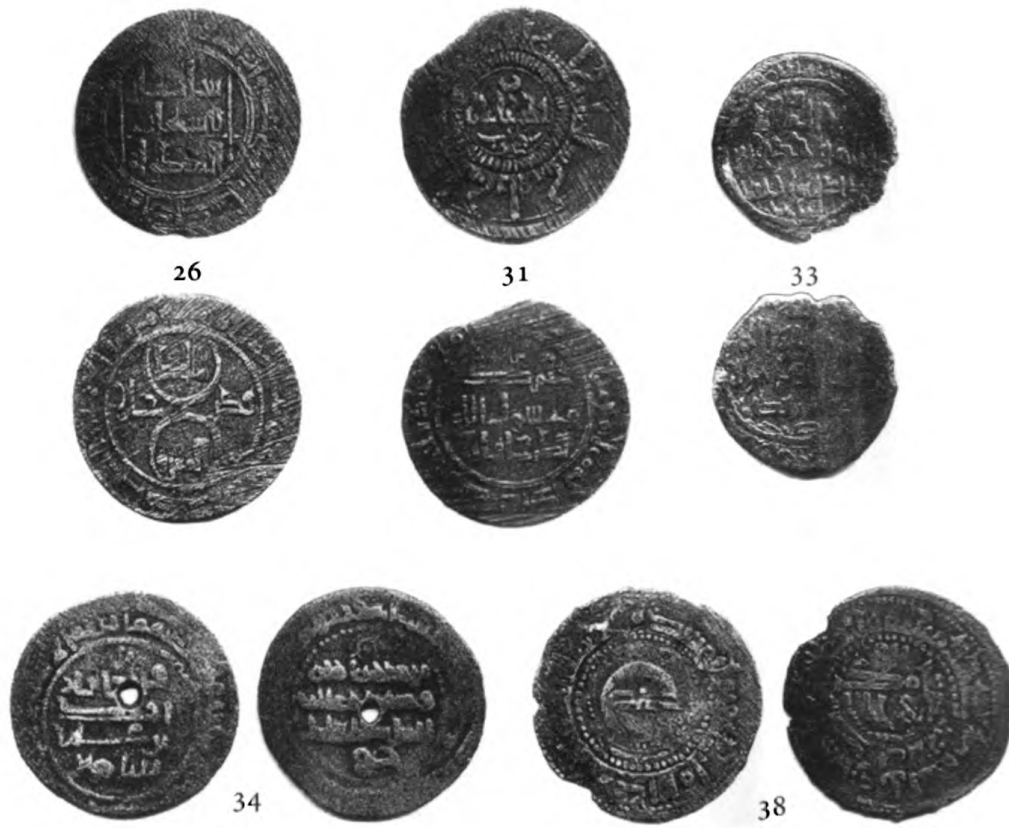
25



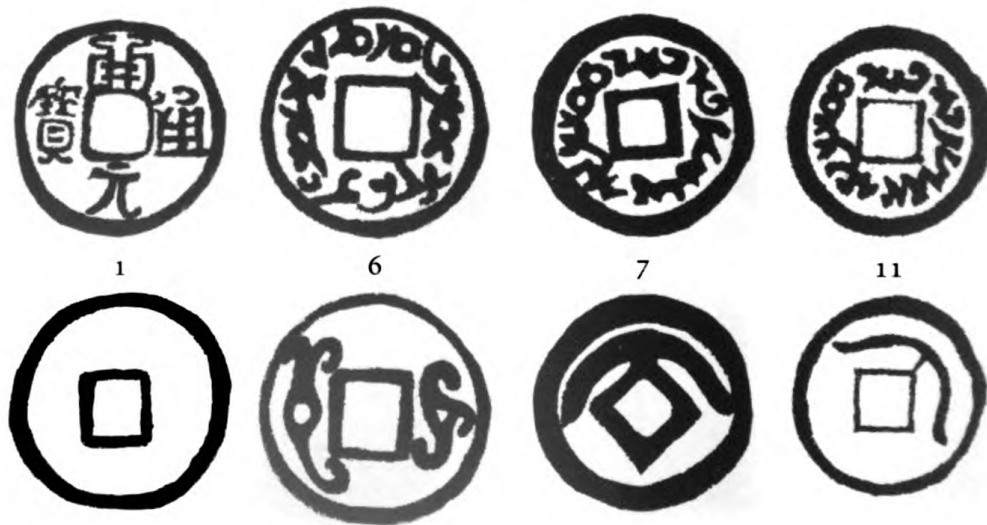
Coins from Andūkān and Sheljī

Plate 26

Andūkān



Shelji



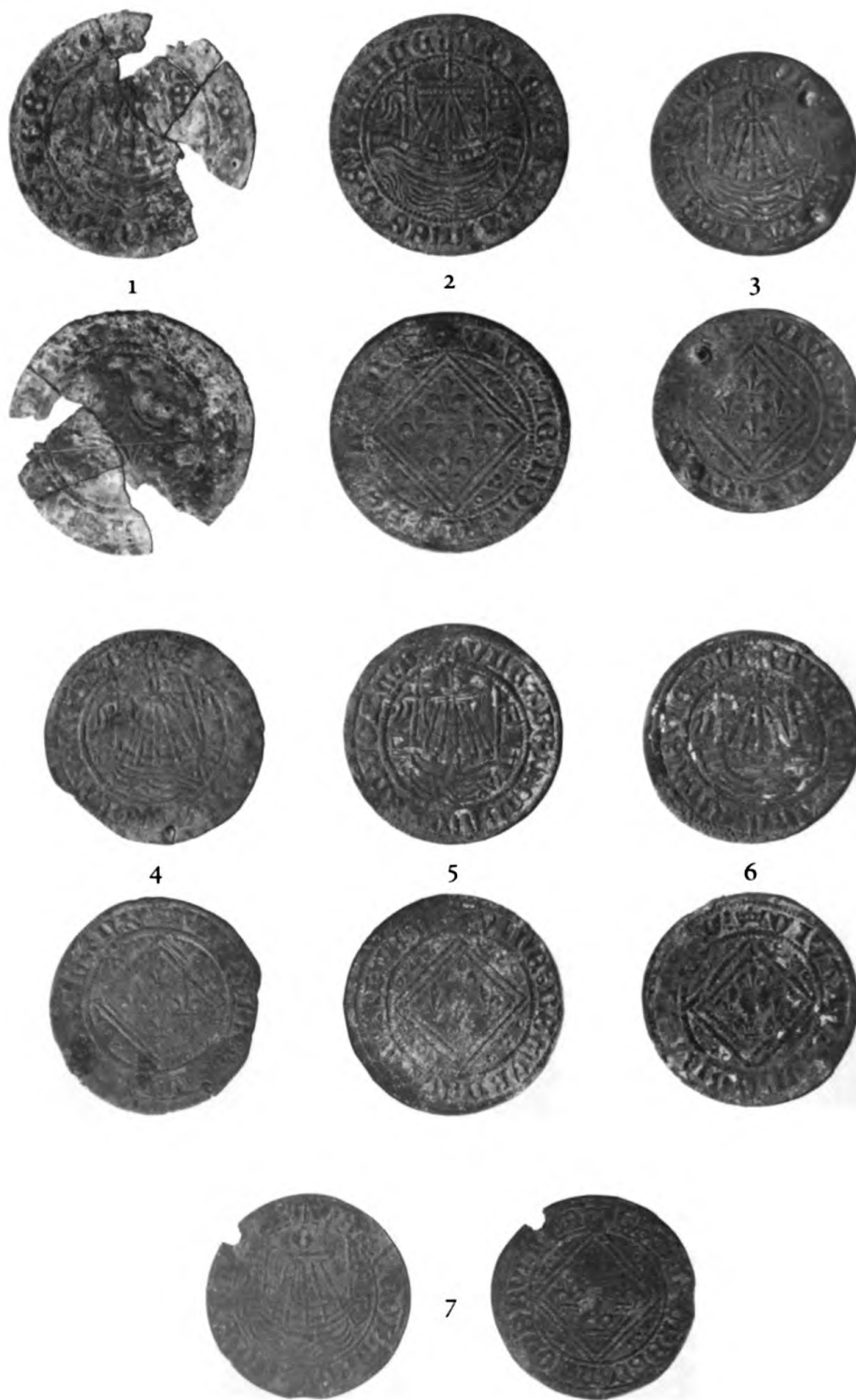
Coins from Andūkān and Shelji

Shelji



Coins from Andūkān and Sheljī

Plate 28



Counting Tokens from Psalmodi



8



9



10



11



12



13



Counting Tokens from Psalmodi

Plate 30



1



2



3



4



5



6



Typology of the St. Patrick Coinage



7



8



9



10



11



12



Typology of the St. Patrick Coinage



Typology of the St. Patrick Coinage

Plate 33



21



22



23



Typology of the St. Patrick Coinage



1



2



3



4



Silver Merchants and Assayers' Marks



1



The ANS Lincoln Memorial Medal



2 (0.67x)



The ANS Lincoln Memorial Medal



3



The ANS Lincoln Memorial Medal



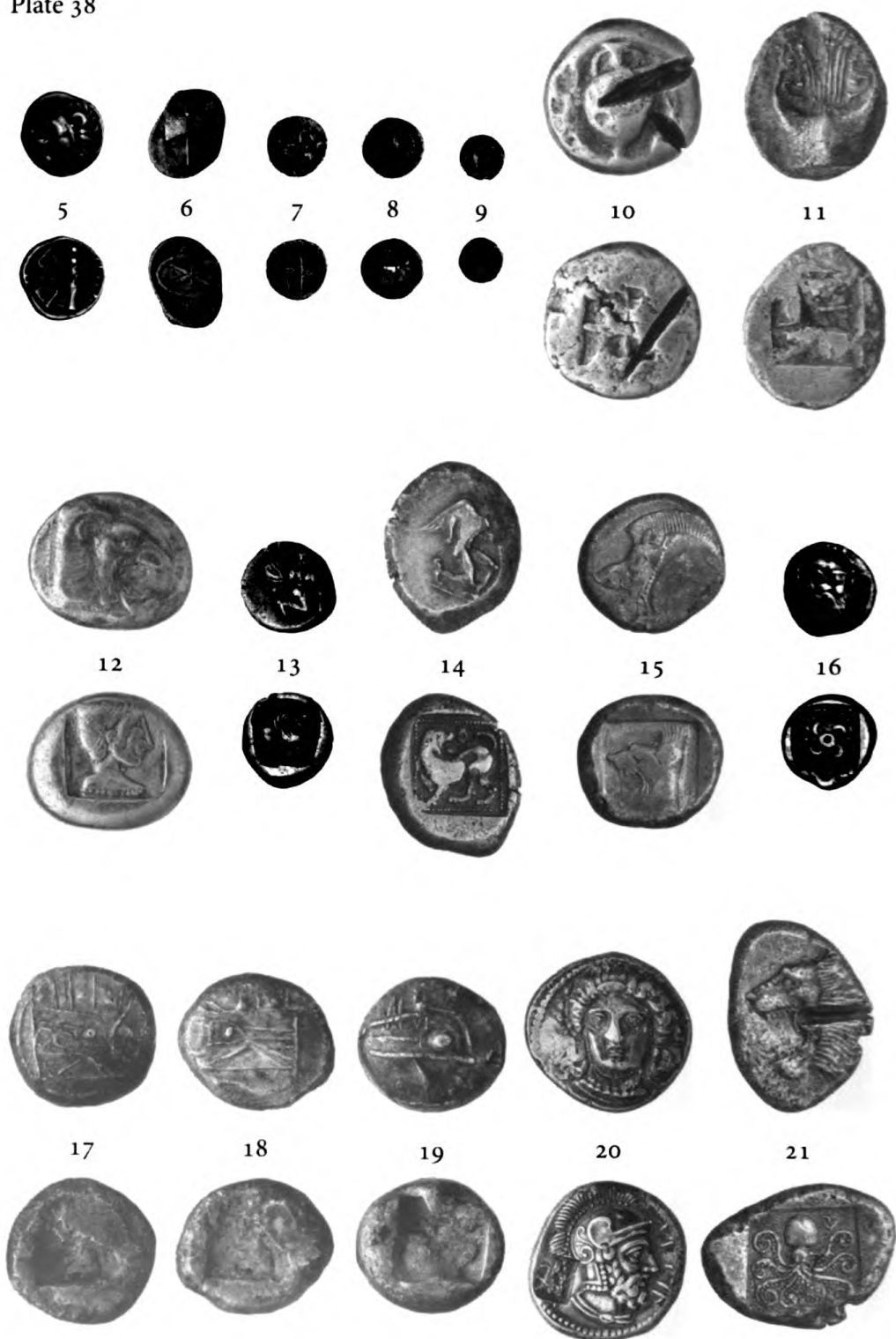
4

The ANS Lincoln Memorial Medal



Acquisitions for 2003 and 2004

Plate 38



Acquisitions for 2003 and 2004



Acquisitions for 2003 and 2004

Plate 40



45



46



47



48



49



50



51



52



53



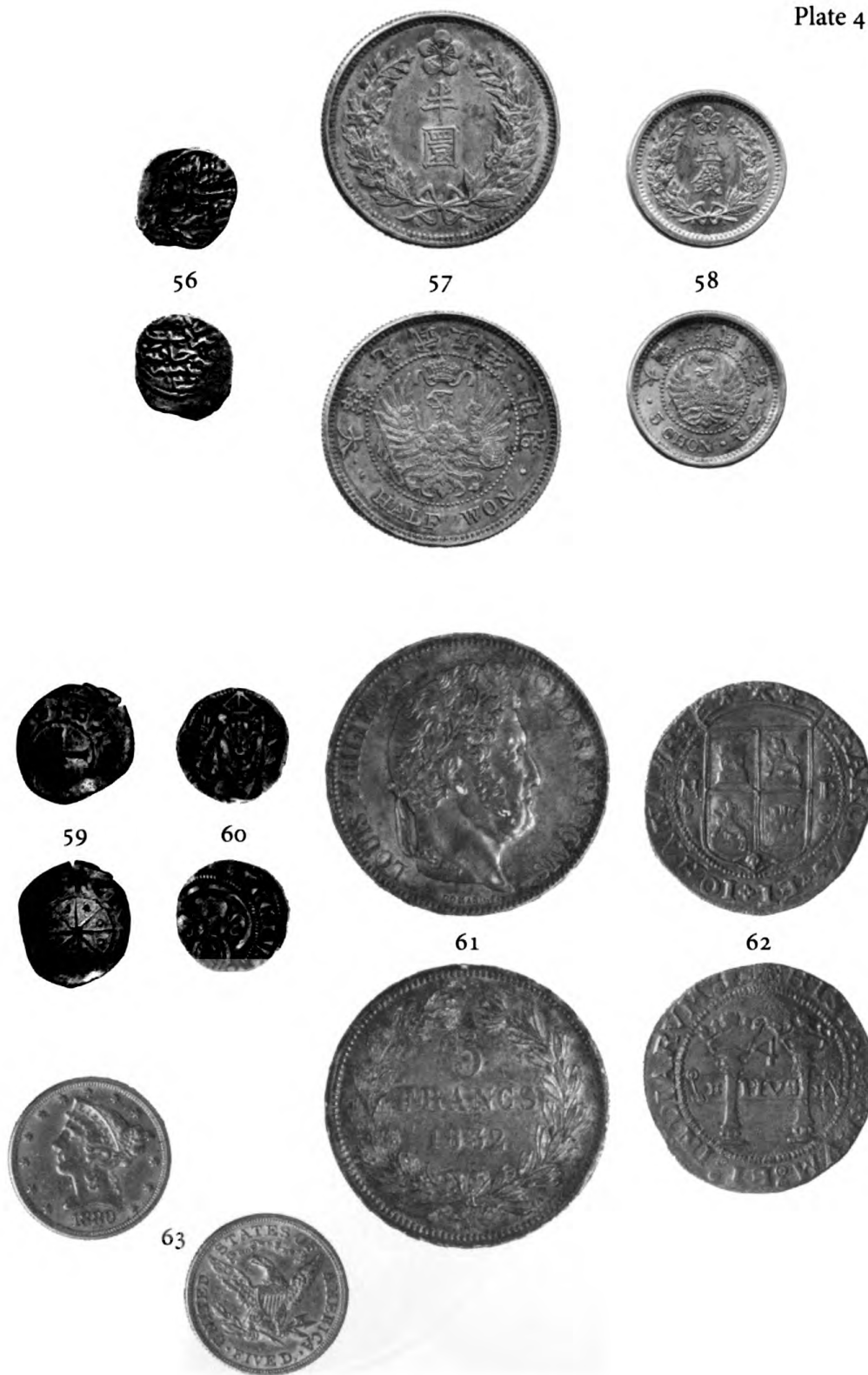
54



55



Acquisitions for 2003 and 2004



Acquisitions for 2003 and 2004

Plate 42



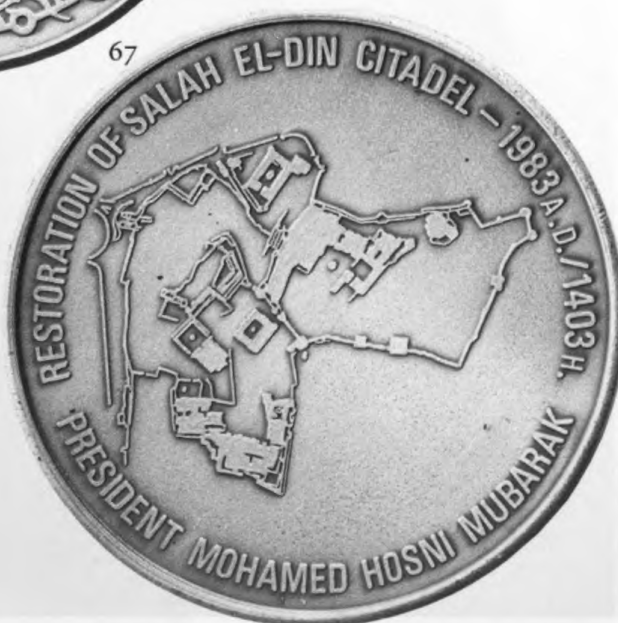
Acquisitions for 2003 and 2004



66



67



Acquisitions for 2003 and 2004

Plate 44



68



Acquisitions for 2003 and 2004



69



70



71 (.33x)

Acquisitions for 2003 and 2004

Plate 46



72



73



74 (.67x)

Acquisitions for 2003 and 2004



75



76



Acquisitions for 2003 and 2004

Plate 48



77



78



Acquisitions for 2003 and 2004



3 0000 103 034 587

ISBN or BDC Part No

0897222962



(removable label)

Digitized by Google

Original from
INDIANA UNIVERSITY